

**OLIN-WILMINGTON
LEVEL I DATA QUALITY EVALUATION
STANDARD OPERATING PROCEDURE AND CHECKLIST
WET CHEMISTRY PARAMETERS BY VARIOUS METHODS**

Note: The following analyses will be evaluated according to the "MADEP QA/QC Guidelines for Sampling, Data Evaluation and Reporting Activities." MADEP, however, may not list QA/QC criteria for every chemical analysis. Where not defined by MADEP, criteria will default to values stipulated in the QAPP. Where the QAPP does not define criteria, QA/QC requirements will default to limits employed by the laboratory.

1.0 Laboratory Deliverable Requirements

1.1 Laboratory Information: Was all of the following provided in the laboratory report? Yes No N/A Comments:
Check items received.

Name of Laboratory Address Project ID Phone # Sample identification – Field and Laboratory

Client Information: Name Address Client Contact (*IDs must be cross-referenced*)

ACTION: If no, contact lab for submission of missing or illegible information.

1.2 Laboratory Report Certification Statement Yes No N/A Comments:

Does the laboratory report include a completed Analytical Report Certification in the required format?

ACTION: If no, contact lab for submission of missing certification or certification with correct format.

1.3 Laboratory Case Narrative: Yes No N/A Comments:

Narrative serves as an exception report for the project and method QA/QC performance. **NA** Narrative includes an explanation of each discrepancy on the Certification Statement.

ACTION: If no, contact lab for submission of missing or illegible information.

1.4 Chain of Custody (COC) copy present with all documentation completed? Yes No N/A Comments:

Does the laboratory report include copies of Chain of Custody forms containing all samples in this SDG?

NOTE: Olin receives and maintains the *original* COC.

ACTION: If no, contact lab for submission of copy of missing completed COC.

1.5 Sample Receipt Information (Cooler Receipt Form): Were each of the following tasks completed and recorded upon receipt of the sample(s) into the laboratory?

Yes No N/A Comments:

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Sample temperature confirmed: must be 1° – 10° C. (If samples were sent by courier and delivered on the same day as collection, temperature requirement does not apply).

Container type noted Condition observed pH verified (where applicable) Field and lab IDs cross referenced

ACTION: If no, contact lab for submission of missing or incomplete documentation.

1.5.1 Were the correct bottles and preservatives used?

Ammonia – 1 Liter polyethylene/H₂SO₄ to pH<2, cool to 4°C

Yes No N/A Comments:

Oil & Grease – 1 Liter glass/HCl or H₂SO₄ to pH<2, cool to 4°C

Alkalinity – 1 Liter polyethylene/cool to 4°C

Chemical Oxygen Demand – 50 mL polyethylene/H₂SO₄ to pH<2, cool to 4°C

Chloride, pH, sulfate, nitrate, nitrite - 50 mL polyethylene/cool to 4°C

Nitrate/nitrite - H₂SO₄ to pH<2, cool to 4°C

Organic Carbon – 500 mL amber glass bottle/HCl or H₂SO₄ to pH<2, cool to 4°C

Sulfide – 50 mL polyethylene/ZnAcetate + NaOH to pH>9, cool to 4°C

Phenolics - H₂SO₄ to pH<2, cool to 4°C

Specific conductance, TDS, TSS – 100 mL polyethylene/cool to 4°C

ACTION: If no, inform senior chemist. Document justification for change in container/volume (if applicable), qualify positive and non-detect data (J) data if cooler temperature exceeds 10°C. Rejection of data requires professional judgment

1.5.2 Were all samples delivered to the laboratory without breakage?

Yes No N/A Comments:

1.5.3 Does the *Cooler Receipt Form* or Lab Narrative indicate other problems with sample receipt, condition of the samples, analytical problems or special circumstances affecting the quality of the data?

Yes No N/A Comments:

1.6 Sample Results Section: Was the following information supplied in the laboratory report for each sample?

Yes No N/A Comments:

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- Field ID and Lab ID Date and time collected Analyst Initials Dilution Factor % moisture or solids Reporting limits
NA Clean-up method Analysis method Preparation method Date of preparation/extraction/digestion clean-up and analysis, where applicable
 Matrix Target analytes and concentrations Units (soils must be reported in dry weight)

ACTION: If no, contact lab for submission of missing or incomplete information.

1.7 QA/QC Information: Was the following information provided in the laboratory report Yes [X] No [] N/A [] Comments: _____
for each sample batch?

- Method blank results LCS recoveries MS/MSD recoveries and RPDs Laboratory duplicate results (where applicable)

ACTION: If no, contact lab for submission of missing or incomplete information.

2.0 Holding Times Yes [X] No [] N/A [] Comments: _____

Have any technical holding times, determined from date of collection to date of analysis, been exceeded? The holding times are as follows:
28 days = ammonia, chemical oxygen demand, chloride, organic carbon, oil & grease, specific conductance, total organic carbon and sulfate

Alkalinity = 14 days Sulfide, TDS, TSS = 7 days pH = analyze immediately Nitrate nitrogen as N = 48 hrs
Nitrite nitrogen as N = 48 hrs Nitrate + Nitrite as N = 28 days

NOTE: List samples that exceed hold time with # of days exceeded on checklist

ACTION: If technical holding times are exceeded qualify results (J). For water samples that are grossly exceeded (>2X hold time) reject (R) all non-detect results. Professional judgment used to qualify soils.

3.0 Laboratory Method Yes No N/A Comments:

3.1 Was the correct laboratory method used?

ACTION: If no, contact lab to provide justification for method change compared to the requested method. Contact senior chemist to inform Client of change or to request variance.

3.2 Are the practical quantitation limits the same as those specified by the Yes [X] No [] N/A [] Comments:
 OAPP/IRSWP Lab?

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- 3.3 Note: The MADEP QA/QC Guidelines do not yet list PQLs for wet chemistry analyses, therefore all criteria will default to values stipulated in the QAPP*. Where the QAPP does not define criteria, QA/QC requirements default to limits employed by the lab**. Other criteria may also apply.

Ammonia* = 5 mg/ L

Alkalinity** = 1 mg/L

Bicarbonate Alkalinity** = 1 mg/L

Carbonate Alkalinity** = 1 mg/L

Nitrate Nitrogen as N* = 5 mg/L

Nitrite Nitrogen as N* = 1 mg/L

Chloride* = 20 mg/L

Hardness * = 2 mg/L

Spec. Cond.* 3 umhos/cm

Total Organic Carbon** = 1 mg/L

Oil & Grease* = 5.5 mg/L

Sulfate (EPA 300.0)* = 40 mg/L

COD*: Low – 20 mg/L

COD* High - 50 mg/L

TDS* = 10 mg/L

TSS* = 5 mg/L

pH* < 2 to > 12

Phenolic - 0.01 mg/L

Other parameter(list) _____ PQL = _____ Source of PQL = _____

Other parameter(list) _____ PQL = _____ Source of PQL = _____

ACTION: If no, evaluate change with respect to sample matrix, preparation, dilution, moisture, etc. If sample PQL is indeterminate, contact lab for explanation.

3.3 Are the appropriate parameter results present for each sample in the SDG?

Yes No N/A Comments:

ACTION: If no, check Request for Analysis to verify if method was ordered and COC to verify that it was sent, and contact lab for resubmission of the missing data

3.4 If *dilutions were required*, were *dilution factors reported*?

Yes No N/A Comments:

ACTION: If no, contact the lab for submission.

4.0 Method Blanks

Yes No N/A Comments:

4.1 Are the Method Blank Summaries present?

ACTION: If no, call the laboratory for submission of missing data.

4.2 Was a method blank analyzed for each analysis batch of wet chemistry field samples of 20 or less?

Yes No N/A Comments:

ACTION: If no, document discrepancy in case narrative and contact lab for justification. Consult senior chemist for action needed.

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4.3 Is the method blank less than the PQL? (See Section 3.2 for PQLs). Yes No N/A Comments:

4.4 Do any method blanks have positive results for wet chemistry parameters? Qualify data according to the following: Yes No N/A Comments:

If the sample concentration is $< 5 \times$ blank value, flag sample result non-detect "U" at the PQL or the concentration reported if greater than the PQL.

If the sample concentration is $> 5 \times$ blank value, no qualification is needed.

ACTION: If any blank has positive results, list all the concentrations detected and flagging level (flagging level = $5 \times$ blank value) on the checklist. List all affected samples and their qualifiers.

5.0 Laboratory Control Standards

5.1 Was a laboratory control standard (LCS) run with each analytical batch of 20 samples or less? Yes No N/A Comments:

ACTION: If no, call laboratory for LCS form submittal. If data is not available, use professional judgment to determine qualification actions for data associated with the batch.

5.2 Is a LCS Summary Form present? Yes No N/A Comments:

ACTION: If no, contact lab for resubmission of missing data.

5.3 Is any wet chemistry analyte LCS recovery outside the control limits? Yes No N/A Comments:

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LCS Limits:

Alkalinity** <input type="checkbox"/> = 80-120%	Bicarbonate Alkalinity** <input type="checkbox"/> = 80-120%	Carbonate Alkalinity** <input type="checkbox"/> = 80-120%	Specific Conductivity * <input type="checkbox"/> = 80-120%
Total Organic Carbon** <input type="checkbox"/> = 80-120%	TDS** <input type="checkbox"/> = 80-120%	Oil & Grease* <input type="checkbox"/> = 80-120%	Ammonia Nitrogen as N* <input checked="" type="checkbox"/> = 80-120%
COD Low* <input type="checkbox"/> = 80-120%	COD High* <input type="checkbox"/> = 80-120%	Nitrate Nitrogen as N** <input checked="" type="checkbox"/> = 80-120%	Nitrite Nitrogen as N** <input checked="" type="checkbox"/> = 80-120%
Hardness* <input type="checkbox"/> = 80-120%	Chloride* <input checked="" type="checkbox"/> = 80-120%	Sulfate (EPA 300.0)* <input checked="" type="checkbox"/> = 80-120%	pH* <input type="checkbox"/> = 98-102% TSS* NA

Other parameter(list) _____ %R = _____ Rec Limits= _____

Other parameter(list) _____ %R = _____ Rec Limits = _____

(MADEP has not yet defined LCS recovery limits for wet chemistry analyses.)

ACTION: If recovery is above the upper limit, qualify all positive sample results within the batch as (J). If recovery is below the lower limit, qualify all positive and no-detect results within the batch as (J). If LCS recovery is <10%, non-detect results are rejected (R).

6.0 Matrix Spikes

Matrix spikes may be collected at different frequencies based on monthly, quarterly, or task specific schedules. Confirm spike requirements for each set with the senior chemist.

OC-SS-448-0.0/0.1-XXX

6.1 Were project-specific MS/MSDs analyzed? List project samples that were spiked.

ACTION: If no, contact senior chemist to see if any were specified.

Yes No N/A Comments:

6.2 Is the MS/MSD Recovery Form present?

ACTION: If no, contact lab for resubmission of missing data.

Yes No N/A Comments:

6.3 Were matrix spikes analyzed at the required frequency of 1 per 20 samples per matrix?

Yes No N/A Comments:

ACTION: If any matrix spike data is missing, call lab for resubmission.

6.4 Are any wet chemistry analyte spike recoveries outside of the QC limits?

Yes No N/A Comments:

NOTE: %R = (SSR-SR) x 100%
 SA

SA = Spike added

Where: SSR = Spiked sample result
 SR = Sample result

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MS/MSD Recovery Limits:

Alkalinity* = NA	Bicarbonate Alkalinity* = NA	Carbonate alkalinity* = NA	Ammonia* (LACHAT) <input checked="" type="checkbox"/> = 75-125%
Chloride*(SM 4500 Cl) <input checked="" type="checkbox"/> = 75-125%	Specific Conductivity * = NA	Total Organic Carbon* = NA	TDS** = NA
Oil & Grease* = NA	COD Low* <input type="checkbox"/> = 75-125%	COD High* <input type="checkbox"/> = 75-125%	Nitrate Nitrogen as N** <input checked="" type="checkbox"/> = 75-125%
Nitrite Nitrogen as N** <input checked="" type="checkbox"/> = 75-125%	Hardness* <input type="checkbox"/> = 75-125%	Sulfate (EPA 300.0)* <input checked="" type="checkbox"/> = 75-125% pH* = NA	TSS* = NA
Other parameter(list) _____	% R = _____	<input type="checkbox"/> Rec Limits = _____	

* = Laboratory Limits

** = Olin QAPP Limits (*MADEP has not yet defined LCS recovery limits for wet chemistry analyses.*)

NOTES: 1) If only one of the recoveries for an MS/MSD pair is outside of the control limits, no qualification is necessary. Use professional judgment for the MS/MSD flags.
 2) If the MS/MSD was performed by the laboratory on a non-project sample, no qualification is required.

ACTION: MS/MSD flags only apply to the sample spiked. Do not evaluate if sample concentration is >4X spike. If the recoveries of the MS and MSD exceed the upper control limit, qualify positive results as estimated (J). If the recoveries of the MS and MSD are lower than the lower control limit but >30%, qualify both positive results and non-detects (J). If the MS/MSD recovery is <30% and the sample is non-detect, the results are considered unusable and flagged (R).

ACTION: Laboratory control limits apply when spiked sample results fall within the normal calibration range. If dilutions are required due to high sample concentrations, the data is evaluated, but no flags are applied.

6.5 Are any RPDs for MS/MSD recoveries outside of the QA/QC limits?

NOTE: $RPD = \frac{S - D}{(S + D)/2} \times 100\%$ Where S = MS result
 D = MSD result

Yes No N/A Comments:

MS/MSD RPD Limits:

RPD ≤ 20

7.0 Laboratory Duplicate

Are the RPDs for the laboratory duplicates <20% unless otherwise specified below?

Yes No N/A Comments:

ACTION: If the RPD is greater than specified limits, qualify all results for that analyte as estimated (J).

pH* = 3%

Specific Conductivity * = 5%

TSS** = 6%

TDS** = 6%

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8.0 Sampling Accuracy

The majority of ground water samples are collected directly from a tap, process stream, or with dedicated tubing. Rinse blanks will not be collected.

8.1 Were rinsate blanks collected? Prior to evaluating rinsate blanks, obtain a list of the associated samples from the senior chemist. Yes [X] No [] N/A [] Comments:

8.2 Do any rinsate blanks have positive results? Yes [X] No [] N/A [] Comments: Ammonia detected in aqueous blank at 0.13 mg/L. Ammonia results are much greater than blank contamination. Professional judgment used not to qualify sample results.

ACTION: Evaluate rinsate results vs. blank results to determine if contaminant may be laboratory-derived. If not lab-related, qualify according to the table below.

If the sample concentration is $< 5 \times$ blank value, flag sample result non-detect "U" at the PQL or the concentration reported if greater than the PQL.

If the sample concentration is $> 5 \times$ blank value, no qualification is needed.

NOTE: MADEP does not require the collection of rinsate blanks.

9.0 Field Duplicates

9.1 Were field duplicate samples collected? Obtain a list of samples and their associated field duplicates. Yes [X] No [] N/A [] Comments:

9.2 Were field duplicates collected per the required frequency? Yes [X] No [] N/A [] Comments:

QAPP/IRSWP MADEP Option 1(1 per 20) MADEP Option 3 (1 per 10)

9.3 Was the RPD $\leq 30\%$ for waters $\leq 50\%$ for soils? Calculate the RPD for results and attach to this review. Yes [] No [X] N/A [] Comments: The RPD QC limit of 50 was exceeded in sample OC-SS-448-0.0/0.1-XXX for sulfate (57). The results for sulfate in sample OC-SS-448-0.0/0.1-XXX and associated duplicate were qualified estimated (J).

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ACTION:. Qualify data (J) for both sample results if the RPD exceeded.

Was any of the data qualified?

Yes No N/A Comments:

If so, apply data qualifiers directly to the DQE copy of laboratory report and **flag pages** for entry in database.

REFERENCES:-

MACTEC, 2007. "Draft Interim Response Steps Work Plan"; Olin Chemical Superfund Site, 51 Eames Street, Wilmington, Massachusetts.; Project No. 6300-06-0010/41.1; July 25, 2007.

Massachusetts Department of Environmental Protection (MADEP), 2004. "The Compendium of Quality Assurance and Quality Control Requirements and Performance Standards for Selected Analytical Methods Used in Support of Response Actions for the Massachusetts Contingency Plan (MCP)"; Bureau of Waste Site Cleanup; 1 Winter Street, Boston, Massachusetts 02108; WSC-CAM; May 2004.

lab_sample_id	field_sample_id	param_name	final_result	RPD
360-34316-8	OC-SS-448-0.0/1.0-DUP	Nitrogen, as Ammonia	33	24%
360-34316-9	OC-SS-448-0.0/1.0-XXX	Nitrogen, as Ammonia	42	
360-34316-8	OC-SS-448-0.0/1.0-DUP	Sulfate	12000	57%
360-34316-9	OC-SS-448-0.0/1.0-XXX	Sulfate	6700	

MJW
9/9/11

CHEMIST REVIEW-VALIDATION CHECKLIST

Project: Olin Chemical Superfund Site Method: DMF
Project #: 6107110016 Laboratory and SDG: Katahdin WIL-22
Date: August 9, 2011 Reviewer: Mike Washburn
 Chemist Review Full Validation (add page 2)

1. Case Narrative and Data Package Completeness (COC Review)
Package complete. Issues noted in narrative are addressed below.

2. Holding Time and Sample Preservation/Collection
Analyzed within technical holding time.

3. QC Blanks
No detections

4. Laboratory Control Sample Review
Within QC limits

5. Field Duplicate Precision
Both samples non-detect.

6. Lab Duplicate Precision
Both samples non-detect.

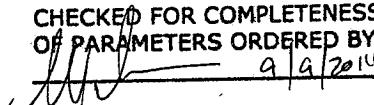
7. Matrix Spike Results (if applicable)
MS and MSD results in sample OC-SS-448-0.0/1.0-XXX for DMF (28/35) were below the QC limit of 70. DMF was not detected in the associated samples and the associated sample reporting limits for DMF were qualified estimated (UJ).

8. Surrogate Recovery (if applicable)
Within QC limits

9. Internal Standard Recovery (if applicable)
Within QC limits

FILE COPY

**OLIN CORPORATION
RI ANALYTICAL - WILMINGTON
SDG: WIL-22
SE3249**

CHECKED FOR COMPLETENESS
OF PARAMETERS ORDERED BY:
 9/9/2014

**KATAHDIN ANALYTICAL SERVICES, INC.
600 TECHNOLOGY WAY
SCARBOROUGH, ME 04074**

KATAHDIN ANALYTICAL SERVICES
MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Client: Olin Corporation
 Project: RI Analytical-Wilmington
 PO No:
 Sample Date: 06/08/11
 Received Date: 06/08/11
 Extraction Date: 06/16/11
 Analysis Date: 06/23/11
 Report Date: 07/07/2011
 Matrix: SOIL

Lab ID: WG92941-4 & WG92941-5
 Client ID: -448-0.0/1.0-XXXMS & -448-0.0/1.0-XXXMSD
 SDG: WIL-22
 Extracted by: JLP
 Extraction Method: 8033M
 Analyst: JLP
 Analysis Method: SW846 8033M
 Lab Prep Batch: WG92941
 Units: mg/Kgdrywt

COMPOUND	MS SPIKE	MSD SPIKE	SAMPLE CONC.	MS CONC.	MSD CONC.	MS %REC.	MSD %REC.	%RPD	QC. LIMIT	QC. LIMITS
dimethylformamide	9.2	9.0	0.00	2.6	3.2	* 28	* 35	21	50	70-130

MJW
9/9/11

Report of Analytical Results

Client: Olin Corporation
Project: RI Analytical-Wilmington
PO No:
Sample Date: 06/08/11
Received Date: 06/08/11
Extraction Date: 06/16/11
Analysis Date: 23-JUN-2011 16:53
Report Date: 07/07/2011
Matrix: SOIL
% Solids: 93.8

Lab ID: SE3249-1
Client ID: -SS-448-0.0/1.0-DUP
SDG: WIL-22
Extracted by: JLP
Extraction Method: 8033M
Analyst: JLP
Analysis Method: SW846 8033M
Lab Prep Batch: WG92941
Units: mg/Kgdrywt

CAS#	Compound	Flags	Results	DF	PQL	Adj.PQL	Adj.MDL
	dimethylformamide	UJ	0.21	1.0	0.20	0.21	0.14
	diethylformamide		84%				

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MJW
9/9/11

KATAHDIN ANALYTICAL SERVICES
Report of Analytical Results

Client: Olin Corporation
Project: RI Analytical-Wilmington
PO No:
Sample Date: 06/08/11
Received Date: 06/08/11
Extraction Date: 06/16/11
Analysis Date: 23-JUN-2011 17:21
Report Date: 07/07/2011
Matrix: SOIL
% Solids: 93.8

Lab ID: SE3249-2
Client ID: -448-0.0/1.0-XXX
SDG: WIL-22
Extracted by: JLP
Extraction Method: 8033M
Analyst: JLP
Analysis Method: SW846 8033M
Lab Prep Batch: WG92941
Units: mg/Kgdrywt

CAS#	Compound	Flags	Results	DF	PQL	Adj.PQL	Adj.MDL
	dimethylformamide	UJ	0.20	1.0	0.20	0.20	0.13
	diethylformamide		80%				

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MJW
9/9/11

CHEMIST REVIEW-VALIDATION CHECKLIST

Project: Olin Chemical Superfund Site
Project #: 6107110016.12
Date: 9/7/11

Method: Formaldehyde/Acetaldehyde _____
Laboratory and SDG: TAL 360-34316-1
Reviewer: MM

Chemist Review Full Validation (add page 2)

1. Case Narrative and Data Package Completeness (COC Review)

Present and complete.

2. Holding Time and Sample Preservation/Collection (aqueous 3 days to extraction then 3 days to analysis)

Samples were extracted three days beyond hold time. Results and reporting limits were qualified estimated (J/UJ).

3. QC Blanks

All non-detect.

4. Laboratory Control Sample Review (% recovery 80-120, RPD 30)

All criteria were met.

5. Field Duplicate Precision (RPD 30)

All criteria were met.

6. Lab Duplicate Precision (RPD 20)

Not applicable.

7. Matrix Spike Results (if applicable) (% recovery 75-125, RPD 25)

Sample OC-SS-448-0.0/1.0-XXX was submitted for MS/MSD analysis. The MS and/or MSD percent recovery of formaldehyde (74 and 67) and acetaldehyde (72) were less than the lower QC limit of 75. Associated samples are OC-SS-448-0.0/1.0-XXX and OC-SS-448-0.0/1.0-DUP. The associated sample results for formaldehyde were qualified estimated (J). The associated sample results for acetaldehyde were not detected and the reporting limits were qualified estimated (UJ).

8. Surrogate Recovery (if applicable)

Not applicable.

9. Internal Standard Recovery (if applicable)

Not applicable.

Analytical Data

Client: Olin Corporation

Job Number: 360-34316-1
Sdg Number: 360-34316-1

Client Sample ID: OC-SS-448-0.0/1.0-DUP

Lab Sample ID: 360-34316-8

Date Sampled: 06/08/2011 0935

Client Matrix: Solid

% Moisture: 4.6

Date Received: 06/08/2011 1750

8315A Carbonyl Compounds (HPLC)

Analysis Method:	8315A	Analysis Batch:	640-81913	Instrument ID:	LCM
Prep Method:	8315_S_Prep	Prep Batch:	640-81797	Lab File ID:	1F15M6.d
Dilution:	1.0			Initial Weight/Volume:	20.0 g
Analysis Date:	06/15/2011 0902			Final Weight/Volume:	4 mL
Prep Date:	06/14/2011 0740			Injection Volume:	10 uL

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Formaldehyde		300 <i>3</i>		82	100
Acetaldehyde		ND <i>3</i>		30	210


Robert J. Smith
9/21/11

Analytical Data

Client: Olin Corporation

Job Number: 360-34316-1
Sdg Number: 360-34316-1

Client Sample ID: OC-SS-448-0.0/1.0-XXX

Lab Sample ID: 360-34316-9

Date Sampled: 06/08/2011 0935

Client Matrix: Solid

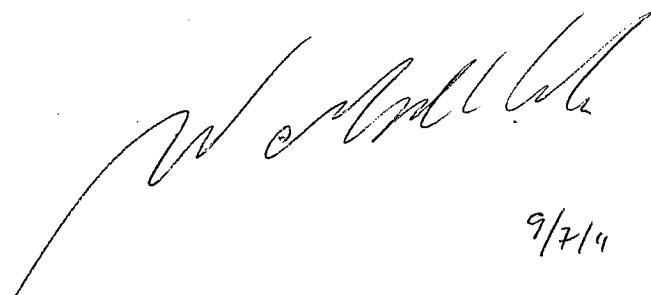
% Moisture: 12.6

Date Received: 06/08/2011 1750

8315A Carbonyl Compounds (HPLC)

Analysis Method:	8315A	Analysis Batch:	640-81913	Instrument ID:	LCM
Prep Method:	8315_S_Prep	Prep Batch:	640-81797	Lab File ID:	1F15M7.d
Dilution:	1.0			Initial Weight/Volume:	20.0 g
Analysis Date:	06/15/2011 0914			Final Weight/Volume:	4 mL
Prep Date:	06/14/2011 0740			Injection Volume:	10 uL

Analyte	Dry Wt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Formaldehyde		350	3	89	110
Acetaldehyde		ND	5	33	230


9/21/11

Quality Control Results

Client: Olin Corporation

Job Number: 360-34316-1
Sdg Number: 360-34316-1

Laboratory Control/

Laboratory Duplicate Data Report - Batch: 640-81797

LCS Lab Sample ID: LCS 640-81797/2-A Units: ug/Kg
Client Matrix: Solid
Dilution: 1.0
Analysis Date: 06/15/2011 0838
Prep Date: 06/14/2011 0740
Leach Date: N/A

Method: 8315A

Preparation: 8315_S_Prep

LCSD Lab Sample ID: LCSD 640-81797/3-A
Client Matrix: Solid
Dilution: 1.0
Analysis Date: 06/15/2011 0850
Prep Date: 06/14/2011 0740
Leach Date: N/A

Analyte	LCS Spike Amount	LCSD Spike Amount	LCS Result/Qual	LCSD Result/Qual
Formaldehyde	750	750	654	656
Acetaldehyde	750	750	611	614

Matrix Spike/

Matrix Spike Duplicate Recovery Report - Batch: 640-81797

Method: 8315A

Preparation: 8315_S_Prep

MS Lab Sample ID: 360-34316-9 Analysis Batch: 640-81913 Instrument ID: LCM
Client Matrix: Solid Prep Batch: 640-81797 Lab File ID: 1F15M8.d
Dilution: 1.0 Leach Batch: N/A Initial Weight/Volume: 20.1 g
Analysis Date: 06/15/2011 0926 Final Weight/Volume: 4 mL
Prep Date: 06/14/2011 0740 Injection Volume: 10 uL
Leach Date: N/A

MSD Lab Sample ID: 360-34316-9 Analysis Batch: 640-81913 Instrument ID: LCM
Client Matrix: Solid Prep Batch: 640-81797 Lab File ID: 1F15M9.d
Dilution: 1.0 Leach Batch: N/A Initial Weight/Volume: 20.3 g
Analysis Date: 06/15/2011 0937 Final Weight/Volume: 4 mL
Prep Date: 06/14/2011 0740 Injection Volume: 10 uL
Leach Date: N/A

Analyte	% Rec.		Limit	RPD	RPD Limit	MS Qual	MSD Qual
	MS	MSD					
Formaldehyde	74	67	31 - 131	6	30		
Acetaldehyde	76	72	30 - 130	5	30		

CHEMIST REVIEW-VALIDATION CHECKLIST

Project: Olin Chemical Superfund Site Method: SW8315A Hydrazine, MMA, UDMH
Project #: 6107110016.12 Laboratory and SDG: Lancaster OLN72
Date: 9/9/11 Reviewer: [Signature]

Chemist Review Full Validation (add page 2)

1. Case Narrative and Data Package Completeness (COC Review)

Present and complete.

2. Holding Time and Sample Preservation/Collection (aqueous 10 days extract, 5 days to analyze, soils 14 days extract, 72 hours analyze)

All criteria met.

3. Continuing Calibration (percent recovery 70 – 130)

All criteria met.

4. QC Blanks

All non detect.

5. Laboratory Control Sample Review (percent recovery 70 – 130, RPD aq. 20, soil 35)

All criteria met.

6. Field Duplicate Precision (RPD = 30 aqueous, 50 soil)

All criteria met.

7. Lab Duplicate Precision (RPD = 20 aqueous)

Not applicable.

8. Matrix Spike Results (if applicable) (percent recovery aqueous = 75 – 125, RPD – 20; soil = 40 - 140, RPD - 50)

Very low recoveries (6-10 percent) of all three hydrazine compounds were reported by the lab in both the MS and MSD runs. The recovery of all hydrazine compounds in the lab control sample (LCS) were within the method limits indicating that the lab method was getting good recovery in a clean soil matrix. Hydrazine compounds are known to be unstable, and the low recoveries in the soil collected from the site are interpreted to indicate that chemical conditions in the soil are causing degradation of the hydrazine compounds. Based on professional judgment sample results were not qualified due to the low matrix spike recoveries.

9. Reporting Limits and Data Comparison (PQL = hydr. 0.20 µg/L, 2.0 µg/kg, UDMH/MMH 0.50 µg/L, 5.0 µg/kg)

All criteria met.



Quality Control Summary
Matrix Spike/Matrix Spike Duplicate

SDG: OLN72
Matrix: SOLID

Specialty Services Group

Fraction: Hydrazines by LC/MS/MS

UNSPK: 6310729 MS: 6310730 MSD: 6310731 Analyte	Batch: 11165002 (Sample number(s): 6310728-6310731)								
	Spike Added ng/g	Unspiked Conc ng/g	MS Conc ng/g	MSD Conc ng/g	MS %Rec	MSD %Rec	%Rec Limits	%RPD	%RPD Limits
Hydrazine	120	1.58	13.77	12.56	10 *	9 *	11-102	9	30
Methylhydrazine	600	N.D.	50.61	36.38	8 *	6 *	10-92	33 *	30
1,1-Dimethylhydrazine	600	N.D.	55.45	55.84	9 *	9 *	10-116	1	30

Results are being reported on an as received basis.

INORGANICS
TAL METALS (including mercury)
REGION I VALIDATION CHECKLIST for
OLIN CHEMICAL SUPERFUND SITE
Criteria and Qualifiers: Region I Guidelines (11/08)

TIER I / II / III (circle one)

SITE: Olin Chemical Project #: 6107110016-12

SDG #: 560 - 34316-1

LAB #: Test America – Westfield for ICP-AES and Hg Test America – Irvine for ICP-MS

Sample IDs: Attached tracking sheet or sample listing.

This checklist is designed to be used with the USEPA Data Validation Guidelines Part IV (November 2008). During Level III validation, calculation and transcription checks are completed for instrument tuning, surrogates, target compounds, spike recoveries, calibration data, and internal standards as specified in the guideline. These checks are documented on attached validation notes.

Method 6020A for Cu, Pb, and Ag. Hg by 7470A, All other Metals by 6010C.

YES NO NA	
Data completeness <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> All data summaries, QC forms and raw data available from hard copy or electronic data package <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Data summaries match EDD	Contact lab if missing data. Lab to respond with 24 hours.
Holding Times and Preservation <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Hold times met (6 months, 28 days Hg) <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Preserved (waters HNO ₃)	<i>24 metals x 4 = 96 records</i>
Calibration  <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> ICP/MS Instrument Tune. <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> Mass calibration criteria $\leq 0.1\text{amu}$ from true <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> Resolution $<0.7 \pm 0.1\text{amu}$ full width @ 10% peak height <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> RSD < 5% <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Appropriate number of standards used to establish calibration curve. <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> Correlation coefficient > 0.995 for Hg <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Calibrated daily. <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> ICV/CCV %R within acceptance range. <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> CCVs analyzed at the proper frequency. <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> QL Standard within limits	Verify that tuning meets mass, resolution, and RSD method criteria. ICP: at least one blank and one standard Hg: at least one blank and four standards Correlation coefficient criteria applicable to all analyses except ICP-AES. 90-110% for ICP-AES/MS, 80-120% for Hg. See additional qualification actions in the Region 1 guidelines. Every 10 samples or every 2 hrs. <i>50-150%</i> 70-130% for QL Standard. If out low, (J) detects less than 2X QL standard and (UJ) non-detects. See additional validation actions in the Region I guidelines.

INORGANICS
TAL METALS (including mercury)
REGION I VALIDATION CHECKLIST for
OLIN CHEMICAL SUPERFUND SITE
Criteria and Qualifiers: Region I Guidelines (11/08)

Yes No N/A

TIER I / II / III (circle one)

Blanks

Method:

- Method blank was prepared with each batch of samples or with a maximum of 20 samples → Na (49.6 mg/kg) & Sn (1.23 mg/kg) See attached Form 3 for Actions
- Results >MDL
- Absolute value negative MB results > 5x MDL Not reported on Form 3
- For ICP/MS verify IS responses meet method criteria

Evaluate all blanks for contamination. Highest contaminant level used for action level. 5X the highest blank contamination is the action level.

Calibration Blanks:

- ICB/CCB results > IDL For K, Na, Tl but not @ levels affecting data.
- Absolute value of negative ICB/CCB results > 5x MDL Not reported on Form 3
- CCB analyzed every 10 samples or 2 hrs.

Equipment/Rinseate Blanks:

- Results >MDL Low levels of Al, Ba, Ca, Fe, Na, Zn detected, Not affecting Soil results
- Absolute value of negative ICB/CCB results > 5x MDL Not reported

Not reported

Interference Check Sample

- ICS analyzed at proper frequency
- Interference present in sample at > 50% concentration in ICS → Al, Fe, Ca & Mg
- ICS AB %R 80%-120% were > 50% in Soil samples. Sodium was 1003 µg/L

An ICS must be run at the beginning and end of run or every 8 hours.

If interferences (Al, Ca, Fe, Mg) are not > 50% ICS concentration in sample, do not apply.

ICP-MS Internal Standard Intensities

- Internal standard relative intensities reported by the laboratory
- Internal standard relative intensities are within 60 – 125 %

In ICSA, Sodium was Qualified ND during blank review.

Qualify data based on Region 1 guideline

Note: MCP Limits are 30 – 120%

Matrix Spikes

- All compounds are within %R of 75-125% excluding results exceeding the spike concentration by ≥4x
- Were post-digestion spikes reported for unacceptable pre-digestion spike recoveries
- Was a field blank used for spike analysis

Antimony @ 40 and 42 % Rec
All Sb results

Post-digestion spikes %R limits = 75% - 125%

INORGANICS
TAL METALS (including mercury)
REGION I VALIDATION CHECKLIST for
OLIN CHEMICAL SUPERFUND SITE
Criteria and Qualifiers: Region I Guidelines (11/08)

Yes No N/A

TIER I / II / III (circle one)

Laboratory Control Samples (LCS)	<input checked="" type="checkbox"/> <input type="checkbox"/> Percent recoveries are within limits (waters and soil 80-120%) <i>See note →</i> <input checked="" type="checkbox"/> <input type="checkbox"/> An LCS was analyzed for each matrix, batch of samples, or every 20 samples.	Laboratory used a certified Reference Material (Soil) for the LCS/LCSD. Control limits were set by the lab and ranged from 10-110%. Recoveries were within lab limits. Antimony was @ 23% Rec (which was also low in the MS/MSD). No Quals given.
Laboratory Duplicate	<input checked="" type="checkbox"/> <input type="checkbox"/> Was a field blank used as the lab duplicate <input checked="" type="checkbox"/> <input type="checkbox"/> Is the RPD within water control limits of $\pm 20\%$ for sample values $>5x$ RL (35% for soil) <input checked="" type="checkbox"/> <input type="checkbox"/> Is the control limit of \pm RL met for sample values $<5x$ RL (2x RL for soil) <input checked="" type="checkbox"/> <input type="checkbox"/> Was a duplicate analyzed for every matrix and every 20 samples or batch	<i>→ Analyzed on the LCS/LCSD (CRM)</i> OC-55-448
Field-Duplicate	<input checked="" type="checkbox"/> <input type="checkbox"/> For sample values $>5x$ RL, the RPD control limit of $\pm 30\%$ (50% for soil) was met <input checked="" type="checkbox"/> <input type="checkbox"/> For sample values $<5x$ RL, the control limit of $\pm 2x$ RL (4x RL for soil) was met	
Serial Dilution	<input type="checkbox"/> <input checked="" type="checkbox"/> Are any percent difference criteria $> 15\%$ (for samples with a concentration >50 times the IDL) <input checked="" type="checkbox"/> <input type="checkbox"/> Are results of the diluted samples $>$ the original sample results	

Validator's Signature: Doug Lee

Date: 9/8/11

Reference:

MACTEC, Project Operation Plan Volume IIB, Quality Assurance Project Plan for Remedial Investigation/Feasibility Study – Olin Chemical Superfund Site, Wilmington Property, 51 Eames Street, Wilmington, MA”, MACTEC Engineering and Consulting. April 2009.

1A-IN
INORGANIC ANALYSIS DATA SHEET
METALS

Client Sample ID: OC-SS-452-0.0/1.0-XXX Lab Sample ID: 360-34316-1

Lab Name: TestAmerica Westfield Job No.: 360-34316-1

SDG ID.: 360-34316-1

Matrix: Solid Date Sampled: 06/08/2011 11:35

Reporting Basis: DRY Date Received: 06/08/2011 17:50

% Solids: 96.3

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7429-90-5	Aluminum	7700	2.7	1.2	mg/Kg			1	6010B
7440-36-0	Antimony	ND	0.55	0.16	mg/Kg	J		1	6010B
7440-38-2	Arsenic	12	1.1	0.20	mg/Kg			1	6010B
7440-39-3	Barium	35	0.55	0.27	mg/Kg			1	6010B
7440-41-7	Beryllium	0.28	0.22	0.0068	mg/Kg			1	6010B
7440-43-9	Cadmium	0.041	0.22	0.0088	mg/Kg	J		1	6010B
7440-70-2	Calcium	6900	11	3.9	mg/Kg	B		1	6010B
7440-47-3	Chromium	85	0.55	0.27	mg/Kg			1	6010B
7440-48-4	Cobalt	4.5	0.55	0.068	mg/Kg			1	6010B
7440-50-8	Copper	12	1.1	0.14	mg/Kg	B		1	6010B
7439-89-6	Iron	14000	5.5	1.0	mg/Kg	B		1	6010B
7439-92-1	Lead	8.3	0.55	0.062	mg/Kg			1	6010B
7439-95-4	Magnesium	3700	11	1.7	mg/Kg	B		1	6010B
7439-96-5	Manganese	160	1.1	0.10	mg/Kg			1	6010B
7440-02-0	Nickel	12	1.1	0.097	mg/Kg			1	6010B
7440-09-7	Potassium	1700	220	44	mg/Kg	B		1	6010B
7782-49-2	Selenium	ND	0.55	0.21	mg/Kg			1	6010B
7440-22-4	Silver	ND	0.55	0.063	mg/Kg			1	6010B
7440-23-5	Sodium	ND	110	17	mg/Kg	B		1	6010B
7440-28-0	Thallium	ND	1.1	0.18	mg/Kg			1	6010B
7440-62-2	Vanadium	20	0.55	0.071	mg/Kg			1	6010B
7440-66-6	Zinc	28	2.7	0.34	mg/Kg			1	6010B
7440-31-5	Tin	ND	1.2	5.5	mg/Kg	B	B	1	6010B
7439-97-6	Mercury	0.029	0.074	0.018	mg/Kg	J		1	7471A

9/8/11
TC

1A-IN
INORGANIC ANALYSIS DATA SHEET
METALS

Client Sample ID: OC-SS-433-0.0/1.0-XXX	Lab Sample ID: 360-34316-7
Lab Name: TestAmerica Westfield	Job No.: 360-34316-1
SDG ID.: 360-34316-1	
Matrix: Solid	Date Sampled: 06/08/2011 08:45
Reporting Basis: DRY	Date Received: 06/08/2011 17:50
% Solids: 95.2	

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7429-90-5	Aluminum	6900	2.8	1.2	mg/Kg			1	6010B
7440-36-0	Antimony	ND	0.56	0.16	mg/Kg	U	T	1	6010B
7440-38-2	Arsenic	32	1.1	0.20	mg/Kg			1	6010B
7440-39-3	Barium	19	0.56	0.28	mg/Kg			1	6010B
7440-41-7	Beryllium	0.25	0.23	0.0071	mg/Kg			1	6010B
7440-43-9	Cadmium	0.064	0.23	0.0091	mg/Kg	J		1	6010B
7440-70-2	Calcium	1300	11	4.0	mg/Kg	F		1	6010B
7440-47-3	Chromium	14	0.56	0.28	mg/Kg			1	6010B
7440-48-4	Cobalt	2.9	0.56	0.071	mg/Kg			1	6010B
7440-50-8	Copper	23	1.1	0.15	mg/Kg	F		1	6010B
7439-89-6	Iron	13000	5.6	1.1	mg/Kg	F		1	6010B
7439-92-1	Lead	16	0.56	0.064	mg/Kg	F		1	6010B
7439-95-4	Magnesium	2000	11	1.8	mg/Kg	F		1	6010B
7439-96-5	Manganese	110	1.1	0.11	mg/Kg			1	6010B
7440-02-0	Nickel	9.3	1.1	0.10	mg/Kg			1	6010B
7440-09-7	Potassium	1000	230	45	mg/Kg	F		1	6010B
7782-49-2	Selenium	ND	0.56	0.22	mg/Kg			1	6010B
7440-22-4	Silver	ND	0.56	0.065	mg/Kg			1	6010B
7440-23-5	Sodium	ND	56	110	mg/Kg	F	F	1	6010B
7440-28-0	Thallium	ND	1.1	0.19	mg/Kg			1	6010B
7440-62-2	Vanadium	13	0.56	0.073	mg/Kg			1	6010B
7440-66-6	Zinc	20	2.8	0.36	mg/Kg			1	6010B
7440-31-5	Tin	ND	2.8	5.6	mg/Kg	F	F	1	6010B
7439-97-6	Mercury	ND	0.066	0.016	mg/Kg			1	7471A

9/8/11
TC

IA-IN
INORGANIC ANALYSIS DATA SHEET
METALS

Client Sample ID: OC-SS-448-0.0/1.0-DUP Lab Sample ID: 360-34316-8

Lab Name: TestAmerica Westfield Job No.: 360-34316-1

SDG ID.: 360-34316-1

Matrix: Solid Date Sampled: 06/08/2011 09:35

Reporting Basis: DRY Date Received: 06/08/2011 17:50

% Solids: 95.4

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7429-90-5	Aluminum	7000	3.1	1.3	mg/Kg			1	6010B
7440-36-0	Antimony	ND	0.61	0.18	mg/Kg	V/T		1	6010B
7440-38-2	Arsenic	24	1.2	0.22	mg/Kg			1	6010B
7440-39-3	Barium	22	0.61	0.31	mg/Kg			1	6010B
7440-41-7	Beryllium	0.27	0.25	0.0077	mg/Kg			1	6010B
7440-43-9	Cadmium	0.065	0.25	0.0099	mg/Kg	J		1	6010B
7440-70-2	Calcium	7300	12	4.3	mg/Kg	P		1	6010B
7440-47-3	Chromium	16	0.61	0.31	mg/Kg			1	6010B
7440-48-4	Cobalt	3.4	0.61	0.077	mg/Kg			1	6010B
7440-50-8	Copper	21	1.2	0.16	mg/Kg	P		1	6010B
7439-89-6	Iron	12000	6.1	1.2	mg/Kg	P		1	6010B
7439-92-1	Lead	15	0.61	0.069	mg/Kg			1	6010B
7439-95-4	Magnesium	2300	12	1.9	mg/Kg	P		1	6010B
7439-96-5	Manganese	130	1.2	0.12	mg/Kg			1	6010B
7440-02-0	Nickel	11	1.2	0.11	mg/Kg			1	6010B
7440-09-7	Potassium	980	250	49	mg/Kg	P		1	6010B
7782-49-2	Selenium	ND	0.61	0.24	mg/Kg			1	6010B
7440-22-4	Silver	ND	0.61	0.070	mg/Kg			1	6010B
7440-23-5	Sodium	ND	120	19	mg/Kg	P		1	6010B
7440-28-0	Thallium	ND	1.2	0.20	mg/Kg			1	6010B
7440-62-2	Vanadium	13	0.61	0.080	mg/Kg			1	6010B
7440-66-6	Zinc	22	3.1	0.39	mg/Kg			1	6010B
7440-31-5	Tin	ND	6.1	0.39	mg/Kg	P		1	6010B
7439-97-6	Mercury	0.020	0.078	0.019	mg/Kg	J		1	7471A

TC
9/8/11

1A-IN
INORGANIC ANALYSIS DATA SHEET
METALS

Client Sample ID: OC-SS-448-0.0/1.0-XXX

Lab Sample ID: 360-34316-9

Lab Name: TestAmerica Westfield

Job No.: 360-34316-1

SDG ID.: 360-34316-1

Matrix: Solid

Date Sampled: 06/08/2011 09:35

Reporting Basis: DRY

Date Received: 06/08/2011 17:50

% Solids: 87.4

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7429-90-5	Aluminum	6700	3.1	1.3	mg/Kg			1	6010B
7440-36-0	Antimony	ND	0.61	0.18	mg/Kg	J		1	6010B
7440-38-2	Arsenic	23	1.2	0.22	mg/Kg			1	6010B
7440-39-3	Barium	21	0.61	0.31	mg/Kg			1	6010B
7440-41-7	Beryllium	0.27	0.24	0.0076	mg/Kg			1	6010B
7440-43-9	Cadmium	0.069	0.24	0.0098	mg/Kg	J		1	6010B
7440-70-2	Calcium	5400	12	4.3	mg/Kg	P		1	6010B
7440-47-3	Chromium	19	0.61	0.31	mg/Kg			1	6010B
7440-48-4	Cobalt	3.8	0.61	0.076	mg/Kg			1	6010B
7440-50-8	Copper	20	1.2	0.16	mg/Kg	P		1	6010B
7439-89-6	Iron	13000	6.1	1.2	mg/Kg	E		1	6010B
7439-92-1	Lead	13	0.61	0.069	mg/Kg			1	6010B
7439-95-4	Magnesium	2300	12	1.9	mg/Kg	P		1	6010B
7439-96-5	Manganese	140	1.2	0.12	mg/Kg			1	6010B
7440-02-0	Nickel	13	1.2	0.11	mg/Kg			1	6010B
7440-09-7	Potassium	1000	240	49	mg/Kg	P		1	6010B
7782-49-2	Selenium	ND	0.61	0.23	mg/Kg			1	6010B
7440-22-4	Silver	ND	0.61	0.070	mg/Kg			1	6010B
7440-23-5	Sodium	ND	120	19	mg/Kg	J	P	1	6010B
7440-28-0	Thallium	ND	1.2	0.20	mg/Kg			1	6010B
7440-62-2	Vanadium	14	0.61	0.080	mg/Kg			1	6010B
7440-66-6	Zinc	22	3.1	0.39	mg/Kg			1	6010B
7440-31-5	Tin	ND	6.1	0.39	mg/Kg	P	P	1	6010B
7439-97-6	Mercury	ND	0.074	0.018	mg/Kg			1	7471A

9/8/11
TC

3-IN
INSTRUMENT BLANKS
METALS

Lab Name: TestAmerica Westfield

Job No.: 360-34316-1

SDG No.: 360-34316-1

Concentration Units: ug/L

Analyte	RL	ICB 360-75510/11 06/18/2011 12:52		CCB 360-75510/29 06/18/2011 16:00		CCB 360-75510/34 06/18/2011 16:38		CCB 360-75510/46 06/18/2011 17:13	
		Found	C	Found	C	Found	C	Found	C
Aluminum	100	ND		ND		ND		ND	
Arsenic	10	ND		ND		ND		ND	
Barium	10	ND		ND		ND		ND	
Beryllium	1.0	ND		ND		ND		ND	
Cadmium	1.0	ND		ND		ND		ND	
Calcium	400	ND		ND		ND		ND	
Chromium	5.0	ND		ND		ND		ND	
Cobalt	10	ND		ND		ND		ND	
Copper	10	ND		ND		ND		ND	
Iron	100	ND		ND		ND		ND	
Lead	5.0	ND		ND		ND		ND	
Magnesium	400	ND		ND		ND		ND	
Manganese	10	ND		ND		ND		ND	
Nickel	10	ND		ND		ND		ND	
Potassium	4000	1110	J	ND		1260	J	1200	J
Selenium	10	ND		ND		ND		ND	
Silver	5.0	ND		ND		ND		ND	
Sodium	2000	913	J	914	J	895	J	895	J
Thallium	10	ND		ND		2.35	J	ND	
Tin	50	ND		ND		ND		ND	
Vanadium	10	ND		ND		ND		ND	
Zinc	50	ND		ND		ND		ND	

✓

3

Metal conc (ppb) Action level (5x)

X 0.056
(conversion factor
for soil in Mg/kg dry)

K 1260 6300

352 mg/kg Action

Na 895 4475

250. See below

~~STT~~ 2.35 11.75 0.658 All ND no action
TI

Method	Na	49.6 mg/kg	248 mg/kg	All samples Qualified ND @ the RL
Blank	Sn	1.23	6.15 mg/kg	All Samples Qualified ND @ the RL
Mg/kg	K	54.9	275 mg/kg	NO samples Qualified
Mg			13.5 mg/kg	NO samples Qualified
FORM MI-IN	2.69		Page 951 of 1225	06/29/2011 9/2
Fe	3.35	↓	16.75 mg/kg	↓ Ca Bmg/kg X 5 = 65mg/kg
	.285		1.43 mg/kg	

3-IN
METHOD BLANK
METALS

Lab Name: TestAmerica Westfield

Job No.: 360-34316-1

SDG No.: 360-34316-1

Concentration Units: mg/Kg

Lab Sample ID: MB 360-75359/1-A

Instrument Code: Varian ICP

Batch No.: 75510

CAS No.	Analyte	Concentration	C	Q	Method
7429-90-5	Aluminum	ND			6010B
7440-38-2	Arsenic	ND			6010B
7440-39-3	Barium	ND			6010B
7440-41-7	Beryllium	ND			6010B
7440-43-9	Cadmium	ND			6010B
7440-70-2	Calcium	13.0			6010B
7440-47-3	Chromium	ND			6010B
7440-48-4	Cobalt	ND			6010B
7440-50-8	Copper	0.285	J		6010B
7439-89-6	Iron	3.35	J		6010B
7439-92-1	Lead	ND			6010B
7439-95-4	Magnesium	2.64	J		6010B
7439-96-5	Manganese	ND			6010B
7440-02-0	Nickel	ND			6010B
7440-09-7	Potassium	54.9	J		6010B
7782-49-2	Selenium	ND			6010B
7440-22-4	Silver	ND			6010B
7440-23-5	Sodium	49.6	J		6010B
7440-28-0	Thallium	ND			6010B
7440-62-2	Vanadium	ND			6010B
7440-66-6	Zinc	ND			6010B
7440-31-5	Tin	1.23	J		6010B

See instrument blank
sheet for blank actions

9/7/11

TC

4A-IN
INTERFERENCE CHECK STANDARD
METALS

Lab Name: TestAmerica Westfield

Job No.: 360-34316-1

SDG No.: 360-34316-1

Lab Sample ID: ICSA 360-75510/14

Instrument ID: Varian ICP

Lab File ID: 061811b.csv

ICS Source: ICSA wk_00021

Concentration Units: ug/L

Analyte	True	Found	Percent Recovery
	Solution A	Solution A	
Aluminum	100000	101055	101
Arsenic		0.339	
Barium		1.14	
Beryllium		0.0117	
Cadmium		0.221	
Calcium	100000	92867	93
Chromium		0.519	
Cobalt		0.164	
Copper		0.597	
Iron	100000	107397	107
Lead		-2.02	
Magnesium	100000	96864	97
Manganese		1.43	
Nickel		0.644	
Potassium		1415	
Selenium		-3.62	
Silver		1.30	
Sodium		(1054) *	
Thallium		0.248	
Tin		1.54	
Vanadium		-1.41	
Zinc		-0.476	
Antimony		2.69	
Boron		-5.20	
Lithium		1.35	
Molybdenum		-3.76	
Silicon		-3.31	
Silicon		-2.07	
SiO ₂ , Silica		-7.09	
Strontium		-1.04	
Titanium		0.157	
Zirconium		0.363	

* Samples had interferences > 50,000 ppb. Raw instrument
 Low level of Sodium qualified ND from Method blank detections.
 Oval all soil samples of IFCS-11 for sodium.
 No Ovals necessary

(TC)

Calculations are performed before rounding to avoid round-off errors in calculated results.

FORM IVA-IN

TC
9/7/11

4A-IN
INTERFERENCE CHECK STANDARD
METALS

Lab Name: TestAmerica Westfield

Job No.: 360-34316-1

SDG No.: 360-34316-1

Lab Sample ID: ICSA 360-75611/42

Instrument ID: Varian ICP

Lab File ID: 062011a.csv

ICS Source: ICSA wk_00021

Concentration Units: ug/L

Analyte	True	Found	Percent Recovery
	Solution A	Solution A	
Antimony		(-4.26)	MDL 1.4
Aluminum	100000	104327	104
Arsenic		-0.743	
Barium		1.02	
Beryllium		0.0647	
Boron		32.9	
Cadmium		-0.0240	
Calcium	100000	95169	95
Chromium		0.239	
Cobalt		0.405	
Copper		0.0610	
Iron	100000	105676	106
Lead		-0.890	
Lithium		1.22	
Magnesium	100000	98772	99
Manganese		1.16	
Molybdenum		3.30	
Nickel		-0.276	
Potassium		1688	
Selenium		-3.27	
Silicon		-0.407	
Silicon		2.63	
Silver		0.771	
SiO ₂ , Silica		-0.871	
Sodium		1061	
Strontium		-1.26	
Thallium		-1.64	
Tin		1.72	
Titanium		0.657	
Vanadium		-1.34	
Zinc		0.0250	
Zirconium		1.91	

UJ Qual Sb in all samples

Calculations are performed before rounding to avoid round-off errors in calculated results.

FORM IVA-IN

06/29/2011

9/7/11
TC

5A-IN
MATRIX SPIKE SAMPLE RECOVERY
METALS

Client ID: OC-SS-448-0.0/1.0-XXX MS Lab ID: 360-34316-9 MS
 Lab Name: TestAmerica Westfield Job No.: 360-34316-1
 SDG No.: 360-34316-1
 Matrix: Solid Concentration Units: mg/Kg
 % Solids: 87.4

Analyte	SSR C	Sample Result (SR) C	Spike Added (SA)	%R	Control Limit %R	Q	Method
Aluminum	7720	6700	308	326	75-125	4	6010B
Antimony	24.4	ND	61.5	40	75-125	F	6010B
Arsenic	82.0	23	61.5	96	75-125		6010B
Barium	81.5	21	61.5	98	75-125		6010B
Beryllium	57.9	0.27	61.5	94	75-125		6010B
Cadmium	56.3	0.069 J	61.5	91	75-125		6010B
Calcium	7240	5400	1230	145	75-125	4	6010B
Chromium	77.4	19	61.5	95	75-125		6010B
Cobalt	60.6	3.8	61.5	92	75-125		6010B
Copper	79.7	20	61.5	97	75-125		6010B
Iron	12700	13000	308	-105	75-125	4	6010B
Lead	68.7	13	61.5	91	75-125		6010B
Magnesium	3710	2300	1230	112	75-125		6010B
Manganese	209	140	61.5	116	75-125		6010B
Nickel	69.0	13	61.5	91	75-125		6010B
Potassium	2410	1000	1230	111	75-125		6010B
Selenium	56.4	ND	61.5	92	75-125		6010B
Silver	58.5	ND	61.5	95	75-125		6010B
Sodium	1180	73 J	1230	90	75-125		6010B
Thallium	51.9	ND	61.5	84	75-125		6010B
Vanadium	72.6	14	61.5	96	75-125		6010B
Zinc	78.4	22	61.5	91	75-125		6010B
Tin	56.7	1.9 J	61.5	89	75-125		6010B
Mercury	0.946	ND	0.953	99	75-125		7471A

SSR = Spiked Sample Result

UJ Qual Antimony
in All samples.

9/7/11
TC

Calculations are performed before rounding to avoid round-off errors in calculated results.
 Note - Results and Reporting Limits have been adjusted for dry weight.

FORM VA - IN

5A-IN
MATRIX SPIKE DUPLICATE SAMPLE RECOVERY
METALS

Client ID: OC-SS-448-0.0/1.0-XXX MSD

Lab ID: 360-34316-9 MSD

Lab Name: TestAmerica Westfield

Job No.: 360-34316-1

SDG No.: 360-34316-1

Matrix: Solid

Concentration Units: mg/Kg

% Solids: 87.4

Analyte	(SDR) C	Spike Added (SA)	%R	Control Limit %R	RPD	RPD Limit	Q	Method
Aluminum	7720	308	324	75-125	0	35	4	6010B
Antimony	26.1	61.5	42	75-125	7	35	F	6010B
Arsenic	81.2	61.5	95	75-125	1	35		6010B
Barium	79.1	61.5	94	75-125	3	35		6010B
Beryllium	56.8	61.5	92	75-125	2	35		6010B
Cadmium	55.3	61.5	90	75-125	2	35		6010B
Calcium	7120	1230	136	75-125	2	35	4	6010B
Chromium	75.5	61.5	92	75-125	2	35		6010B
Cobalt	60.2	61.5	92	75-125	1	35		6010B
Copper	76.6	61.5	92	75-125	4	35		6010B
Iron	13400	308	126	75-125	5	35	4	6010B
Lead	66.2	61.5	86	75-125	4	35		6010B
Magnesium	3790	1230	119	75-125	2	35		6010B
Manganese	198	61.5	98	75-125	5	35		6010B
Nickel	68.5	61.5	90	75-125	1	35		6010B
Potassium	2300	1230	102	75-125	5	35		6010B
Selenium	55.1	61.5	90	75-125	2	35		6010B
Silver	57.6	61.5	94	75-125	2	35		6010B
Sodium	1150	1230	88	75-125	2	35		6010B
Thallium	51.4	61.5	84	75-125	1	35		6010B
Vanadium	72.0	61.5	95	75-125	1	35		6010B
Zinc	75.8	61.5	87	75-125	3	35		6010B
Tin	55.8	61.5	88	75-125	2	35		6010B

SDR = Sample Duplicate Result

Calculations are performed before rounding to avoid round-off errors in calculated results.
Note - Results and Reporting Limits have been adjusted for dry weight.

FORM VD - IN

9/7/11
TC

lab_sample_id	analysis_m	run_id	fraction	lab_sample_id	field_sample_id	param_name	final_result	final_qualifie
360-34315-1	SW6010	1	T	360-34315-13	OC-EBK-019	Aluminum	36	J
360-34315-1	SW6010	1	T	360-34315-13	OC-EBK-019	Barium	8.7	J
360-34315-1	SW6010	1	T	360-34315-13	OC-EBK-019	Calcium	190	J
360-34315-1	SW6010	1	T	360-34315-13	OC-EBK-019	Iron	57	J
360-34315-1	SW6010	1	T	360-34315-13	OC-EBK-019	Sodium	310	J
360-34315-1	SW6010	1	T	360-34315-13	OC-EBK-019	Zinc	20	J

9/8/11
TC

CHEMIST REVIEW-VALIDATION CHECKLIST

June 2011 Soil Program

Project: Olin Chemical Superfund Site
Project #: 6107110016.12
Date: 9/8/11

Method: Phthalic Acid/Phthalic Anhydride
Laboratory and SDG: TAL 343/6-1
Reviewer: Tige Cunningham

Chemist Review Full Validation (add page 2)

1. Case Narrative and Data Package Completeness (COC Review)

OK✓

2. Holding Time and Sample Preservation/Collection (aqueous 7 days to analysis)

Analyzed w/in holding

3. QC Blanks

Fit in MBC 5.38

Samples are clean

No Quals

4. Laboratory Control Sample Review (% recovery 50-150)

w/in limits

5. Field Duplicate Precision (RPD 30)

FS : FD were ND

6. Lab Duplicate Precision (RPD 20)

Not applicable.

7. Matrix Spike Results (if applicable) (% recovery 50-150, RPD 50)

OC-SS-448 spiked

Recoveries w/in Limits

8. Surrogate Recovery (if applicable)

Not applicable.

9. Internal Standard Recovery (if applicable)

Not applicable.

FORM I
HPLC/IC ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Tallahassee Job No.: 360-34316-1
SDG No.: 360-34316-1
Client Sample ID: OC-SS-448-0.0/1.0-XXX Lab Sample ID: 360-34316-9
Matrix: Solid Lab File ID: 1F16J19.d
Analysis Method: LC65 Date Collected: 06/08/2011 09:35
Extraction Method: LC65 Date Extracted: 06/14/2011 07:40
Sample wt/vol: 5.03(g) Date Analyzed: 06/16/2011 18:47
Con. Extract Vol.: 4 (mL) Dilution Factor: 1
Injection Volume: 20 (uL) GC Column: LC-ANEX ID:
% Moisture: 12.6 GPC Cleanup: (Y/N) N
Analysis Batch No.: 82014 Units: ug/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
88-99-3 & 85-44	Phthalic Acid/Phthalic anhydride	ND		110	4.4

q(8/11
TC

FORM I
HPLC/IC ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Tallahassee</u>	Job No.: <u>360-34316-1</u>
SDG No.: <u>360-34316-1</u>	
Client Sample ID: <u>OC-SS-448-0.0/1.0-DUP</u>	Lab Sample ID: <u>360-34316-8</u>
Matrix: <u>Solid</u>	Lab File ID: <u>1F16J18.d</u>
Analysis Method: <u>LC65</u>	Date Collected: <u>06/08/2011 09:35</u>
Extraction Method: <u>LC65</u>	Date Extracted: <u>06/14/2011 07:40</u>
Sample wt/vol: <u>5.21(g)</u>	Date Analyzed: <u>06/16/2011 18:34</u>
Con. Extract Vol.: <u>4 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>20 (uL)</u>	GC Column: <u>LC-ANEX</u> ID: <u></u>
% Moisture: <u>4.6</u>	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>82014</u>	Units: <u>ug/Kg</u>

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
88-99-3 & 85-44	Phthalic Acid/Phthalic anhydride	ND		100	3.9

9/8/11
TC

SEMIVOLATILE ORGANICS

REGION I VALIDATION CHECKLIST for OLIN CHEMICAL SUPERFUND SITE

Criteria and Qualifications: REGION I Organics Guideline (1996)

TIER I II III (circle one)

SITE: Olin Chemical Superfund Site Project #: 6107110016.12 SDG #: 360-34316-1

LAB #: TAL-Westfield

Sample IDs: Attach tracking sheet and/or sample listing.

This checklist is designed to be used with USEPA Region I Validation Guidelines Part II (12/1996). During Level III validation, calculation and transcription checks are completed for instrument tuning, surrogates, target compounds, spike recoveries, calibration data, and internal standards as specified in the guideline. These checks are documented on attached validation notes.

YES NO NA	
Data completeness <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> All data summaries, QC forms and raw data available from hard copy or electronic data package <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Data summaries match EDD	Contact lab if missing data. Lab to respond with 24 hours.
Holding Times and Preservation <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Hold times met (Waters – Extract within 7 days, analyze within 40 days. Soils – extract within 14 days, analyze within 40 days)	
Instrument Performance Check (Tune) <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Tune available for each 12-hour period samples were analyzed <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Appropriate number of significant figures reported (at least 2) <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Mass/Charge list (m/z) criteria met	
Initial Calibration <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> %RSD less than or equal to 30% <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> RRF greater than or equal to 0.05	
Continuing Calibration <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> %D less than or equal to 25% <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> RRF greater than or equal to 0.05.	See below.
Blank Contamination <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Method blank contamination <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Equipment/Rinseate blank contamination	Evaluate all blanks for contamination. Highest contaminant level used for action level. See below.
Surrogate Recoveries	

SEMIVOLATILE ORGANICS

REGION I VALIDATION CHECKLIST for OLIN CHEMICAL SUPERFUND SITE

Criteria and Qualifications: REGION I Organics Guideline (1996)

TIER I / II / III (circle one)

<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Surrogates percent recovery criteria met: Soil = (base/neutral 30%-130%, acid 30%-130%) Water = (base/neutral 30%-130%, acid 15%-110%)	
Matrix Spikes and Laboratory Control Samples <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> MS/MSD percent recovery criteria met Soil and Water = (base/neutral 40%-140%, acid 30%-130%) <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> MS/MSD RPD criteria met (soils <50%, water <30%) <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> LCS/LCSD percent recovery criteria met soil/water (base 40%-140%, acid 30%-130%) <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> LCS/LCSD RPD criteria met (soils <50%, water <30%)	See below.
Field Duplicates <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> RPD criteria met (soils <50%, water <30%)	
Internal Standard <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Area counts within -50 to +100 percent of calib. std. <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Retention Time within 30 seconds of calib. std.	
Target Compounds <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Reviewed narrative for anomalies	
Tentatively Identified Compounds (TICs) <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> TCL compounds reported as TICs	

Blanks:

2,6-Dinitrotoluene (15 µg/Kg), benzoic acid (19.7 µg/Kg), caprolactum (16.4 µg/Kg) and various TICs were reported in the method blank associated with all samples. Action levels were established at five times the reported 2,6-dinitrotoluene, benzoic acid, and caprolactum blank concentration. Sample results for 2,6-dinitrotoluene and caprolactum were not detected; no qualification was required. Sample detections of benzoic acid were greater than the action level;

no qualification was required. Method blank TICs that were reported in associated samples were rejected and not reported in the final data.

Acetophenone (1.2 µg/L), benzoic acid (1.9 µg/L), butyl benzyl phthalate (1.3 µg/L), caprolactum (0.81 µg/L), diethyl phthalate (2.9 µg/L), dimethylphthalate (0.94 µg/L), di-n-butyl phthalate (1.1 µg/L), and various TICs were reported in the equipment rinsate blank associated with all samples. Reported detections for benzoic acid were qualified (EB) to indicate associated detections in equipment blanks. Equipment blank TICs that were reported in associated samples were rejected and not reported in the final data.

Continuing Calibration:

In the continuing calibration associated with a subset of samples, the percent difference for 2,4-dinitrophenol (-30), 4,6-dinitro-2-methylphenol (-35), and benzo(g,h,i)perylene (35) exceeded the QC limit of 25. The sample results for 2,4-dinitrophenol and 4,6-dinitro-2-methylphenol were not detected and were qualified estimated (UJ) at the reporting limits. The sample results for benzo(g,h,i)perylene were qualified estimated (J).

MS/MSD:

Sample OC-SS-448-0.0/1.0-XXX was submitted for MS/MSD analysis. The MS and/or MSD percent recovery of 3,3'-dichlorobenzidine (0 and 0), 4-chloroaniline (38), aniline (0 and 0), benzo(b)fluoranthene (173), benzo(g,h,i)perylene (154), bis(2-ethylhexyl)phthalate (198 and 383), dibenz(ah)anthracene (181 and 166), hexachlorocyclopentadiene (0 and 20), and indeno(1,2,3-cd)pyrene (144) were outside of the QC limits. Associated samples are OC-SS-448-0.0/1.0-XXX and OC-SS-448-0.0/1.0-DUP. The associated sample results for 3,3'-dichlorobenzidine, aniline, and hexachlorocyclopentadiene were not detected and were rejected (R). The associated sample results for 4-chloroaniline were not detected and were qualified estimated (UJ) at the reporting limits. The associated sample results for benzo(b)fluoranthene, benzo(g,h,i)perylene, and indeno(1,2,3-cd)pyrene were qualified estimated (J). The associated sample results for dibenz(ah)anthracene were not detected; no qualification was required. The unspiked sample concentration for bis(2-ethylhexyl)phthalate was greater than four times the spiking concentration; no qualification was required.

Performance Evaluation:

A PES was submitted with the program samples. Laboratory results from the PES were evaluated by the EPA Region I chemist. Results from the PES evaluation indicated the laboratory was biased low for reporting of phenol results. Sample results for phenol were not detected and were qualified estimated (UJ) at the reporting limits.

Validator's Signature: 

Date: 9/7/11

Reference:

MACTEC, Quality Assurance Project Plan for Remedial Investigation/Feasibility Study – Olin Chemical Superfund Site, Wilmington Property, 51 Eames Street, Wilmington, MA”, MACTEC Engineering and Consulting. Draft .October 2008.

Quality Control Results

Client: Olin Corporation

Job Number: 360-34316-1
Sdg Number: 360-34316-1

Method Blank - Batch: 360-75464

Method: 8270D
Preparation: 3546

Lab Sample ID:	MB 360-75464/1-A	Analysis Batch:	360-75600	Instrument ID:	Inst. J
Client Matrix:	Solid	Prep Batch:	360-75464	Lab File ID:	J2959.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	40.00 g
Analysis Date:	06/21/2011 0102	Units:	ug/Kg	Final Weight/Volume:	1.0 mL
Prep Date:	06/17/2011 1725			Injection Volume:	1 uL
Leach Date:	N/A				

Analyte	Result	Qual	MDL	RL
1,1'-Biphenyl	ND		7.5	25
1,2,4,5-Tetrachlorobenzene	ND		7.5	25
1,2,4-Trichlorobenzene	ND		7.5	25
1,2-Dichlorobenzene	ND		7.5	25
1,3-Dichlorobenzene	ND		7.5	25
1,4-Dichlorobenzene	ND		7.5	25
1-Methylnaphthalene	ND		7.5	25
2,2'-oxybis[1-chloropropane]	ND		7.5	25
2,3,4,6-Tetrachlorophenol	ND		7.5	25
2,4,5-Trichlorophenol	ND		7.5	25
2,4,6-Trichlorophenol	ND		7.5	25
2,4-Dichlorophenol	ND		7.5	25
2,4-Dimethylphenol	ND		9.8	25
2,4-Dinitrophenol	ND		7.5	25
2,4-Dinitrotoluene	ND		7.5	25
2,6-Dinitrotoluene	15.0	J	7.5	25
2-Chloronaphthalene	ND		7.5	25
2-Chlorophenol	ND		7.5	25
2-Methylnaphthalene	ND		7.5	25
2-Methylphenol	ND		15	25
2-Nitroaniline	ND		7.5	130
2-Nitrophenol	ND		7.5	25
3 & 4 Methylphenol	ND		7.5	50
3,3'-Dichlorobenzidine	ND		7.5	130
3-Nitroaniline	ND		7.5	130
4,6-Dinitro-2-methylphenol	ND		7.5	25
4-Bromophenyl phenyl ether	ND		7.5	50
4-Chloro-3-methylphenol	ND		7.5	50
4-Chloroaniline	ND		7.5	25
4-Chlorophenyl phenyl ether	ND		7.5	130
4-Nitroaniline	ND		7.5	130
4-Nitrophenol	ND		7.5	25
Acenaphthene	ND		7.5	25
Acenaphthylene	ND		7.5	25
Acetophenone	ND		13	25
Aniline	ND		7.5	25
Anthracene	ND		7.5	25
Atrazine	ND		7.5	25
Azobenzene	ND		7.5	25
Benzaldehyde	ND		7.5	25
Benzo[a]anthracene	ND		7.5	25
Benzo[a]pyrene	ND		7.5	25
Benzo[b]fluoranthene	ND		7.5	25
Benzo[g,h,i]perylene	ND		7.5	25
Benzo[k]fluoranthene	ND		7.5	25

Quality Control Results

Client: Olin Corporation

Job Number: 360-34316-1
Sdg Number: 360-34316-1

Method Blank - Batch: 360-75464

Method: 8270D

Preparation: 3546

Lab Sample ID:	MB 360-75464/1-A	Analysis Batch:	360-75600	Instrument ID:	Inst. J
Client Matrix:	Solid	Prep Batch:	360-75464	Lab File ID:	J2959.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	40.00 g
Analysis Date:	06/21/2011 0102	Units:	ug/Kg	Final Weight/Volume:	1.0 mL
Prep Date:	06/17/2011 1725			Injection Volume:	1 uL
Leach Date:	N/A				

Analyte	Result	Qual	MDL	RL
Benzoic acid	19.7	J	11	130
Benzophenone	ND		7.5	25
Benzyl alcohol	ND		21	50
Bis(2-chloroethoxy)methane	ND		7.5	25
Bis(2-chloroethyl)ether	ND		7.5	25
Bis(2-ethylhexyl) phthalate	ND		7.5	25
Butyl benzyl phthalate	ND		7.5	25
Caprolactam	16.4	J	7.5	25
Carbazole	ND		7.5	25
Chrysene	ND		7.5	25
Dibenz(a,h)anthracene	ND		7.5	25
Dibenzofuran	ND		7.5	25
Diethyl phthalate	ND		7.5	25
Dimethyl phthalate	ND		7.5	25
Di-n-butyl phthalate	ND		22	25
Di-n-octyl phthalate	ND		13	25
Fluoranthene	ND		7.5	25
Fluorene	ND		7.5	25
Hexachlorobenzene	ND		7.5	25
Hexachlorobutadiene	ND		7.5	25
Hexachlorocyclopentadiene	ND		7.5	50
Hexachloroethane	ND		7.5	25
Indeno[1,2,3-cd]pyrene	ND		7.5	25
Isophorone	ND		7.5	25
Naphthalene	ND		7.5	25
Nitrobenzene	ND		7.5	25
N-Nitrosodi-n-propylamine	ND		7.5	25
N-Nitrosodiphenylamine	ND		7.5	25
Pentachlorophenol	ND		7.5	25
Phenanthrene	ND		7.5	25
Phenol	ND		13	25
Diphenyl oxide	ND		7.5	25
Pyrene	ND		7.5	25
N-Nitrosodimethylamine	ND		8.9	25

Surrogate	% Rec	Acceptance Limits
2,4,6-Tribromophenol	72	30 - 130
2-Fluorobiphenyl	63	30 - 130
2-Fluorophenol	64	30 - 130
Nitrobenzene-d5	65	30 - 130
Phenol-d5	67	30 - 130
Terphenyl-d14	77	30 - 130

Quality Control Results

Client: Olin Corporation

Job Number: 360-34316-1
Sdg Number: 360-34316-1**Method Blank TICs- Batch: 360-75464**

Cas Number	Analyte	RT	Est. Result	Qual
71-43-2	Unknown	1.21	42.8	T J
	Benzene	1.27	38.3	T J N
	Unknown	1.35	28.0	T J
	Unknown	3.04	64.8	T J
	Unknown	3.72	2980	T J
111-76-2	Ethanol, 2-butoxy-	5.08	48.3	T J N
	Unknown	11.22	10.2	T J
57-11-4	Octadecanoic acid	12.38	27.0	T J N
18435-45-5	1-Nonadecene	13.54	25.3	T J N

Analytical Data

Client: Olin Corporation

Job Number: 360-34315-1
Sdg Number: 360-34315-1

Client Sample ID: OC-EBK-019

Date Sampled: 06/08/2011 1315
Date Received: 06/08/2011 1750

Lab Sample ID: 360-34315-13

Client Matrix: Water

8270D Semivolatile Organic Compounds (GC/MS) Low Level

Analysis Method:	8270D	Analysis Batch:	360-75365	Instrument ID:	Inst. J
Prep Method:	3510C	Prep Batch:	360-75223	Lab File ID:	J2927.D
Dilution:	1.0			Initial Weight/Volume:	1100 mL
Analysis Date:	06/16/2011 0942			Final Weight/Volume:	1.0 mL
Prep Date:	06/14/2011 1501			Injection Volume:	1 uL

Analyte	Result (ug/L)	Qualifier	MDL	RL
1,1'-Biphenyl	ND		0.45	4.5
1,2,4,5-Tetrachlorobenzene	ND		0.45	4.5
1-Methylnaphthalene	ND		0.045	4.5
2,2'-oxybis[1-chloropropane]	ND		0.45	4.5
2,3,4,6-Tetrachlorophenol	ND		0.45	4.5
2,4,5-Trichlorophenol	ND		0.45	4.5
2,4,6-Trichlorophenol	ND		0.45	4.5
2,4-Dichlorophenol	ND		0.45	4.5
2,4-Dimethylphenol	ND		0.45	4.5
2,4-Dinitrophenol	ND		0.45	4.5
2,4-Dinitrotoluene	ND		0.45	4.5
2,6-Dinitrotoluene	ND		0.45	4.5
2-Chloronaphthalene	ND		0.45	4.5
2-Chlorophenol	ND		0.045	0.91
2-Methylnaphthalene	ND		0.45	4.5
2-Methylphenol	ND		0.45	4.5
2-Nitroaniline	ND		0.45	4.5
2-Nitrophenol	ND		0.45	4.5
3 & 4 Methylphenol	ND		0.45	4.5
3,3'-Dichlorobenzidine	ND		0.45	4.5
3-Nitroaniline	ND		0.45	4.5
4,6-Dinitro-2-methylphenol	ND		0.45	4.5
4-Bromophenyl phenyl ether	ND		0.45	4.5
4-Chloro-3-methylphenol	ND		0.45	4.5
4-Chloroaniline	ND		0.45	4.5
4-Chlorophenyl phenyl ether	ND		0.45	4.5
4-Nitroaniline	ND		0.45	4.5
4-Nitrophenol	ND		0.45	4.5
Acenaphthene	ND		0.045	0.91
Acenaphthylene	ND		0.045	0.27
Acetophenone	1.2	JB	0.45	4.5
Aniline	ND		0.45	4.5
Anthracene	ND		0.064	0.91
Atrazine	ND		0.45	4.5
Azobenzene	ND		0.45	4.5
Benzaldehyde	ND		0.45	4.5
Benzo[a]anthracene	ND		0.15	0.27
Benzo[a]pyrene	ND		0.094	0.18
Benzo[b]fluoranthene	ND		0.13	0.27
Benzo[g,h,i]perylene	ND		0.085	0.45
Benzo[k]fluoranthene	ND		0.15	0.27
Benzoic acid	1.9	J	0.45	4.5
Benzophenone	ND		0.45	4.5
Benzyl alcohol	ND		0.45	9.1
Bis(2-chloroethoxy)methane	ND		0.45	4.5
Bis(2-chloroethyl)ether	ND		0.45	4.5

Analytical Data

Client: Olin Corporation

Job Number: 360-34315-1
Sdg Number: 360-34315-1

Client Sample ID: OC-EBK-019

Date Sampled: 06/08/2011 1315
Date Received: 06/08/2011 1750

Lab Sample ID: 360-34315-13
Client Matrix: Water

8270D Semivolatile Organic Compounds (GC/MS) Low Level

Analysis Method:	8270D	Analysis Batch:	360-75365	Instrument ID:	Inst. J
Prep Method:	3510C	Prep Batch:	360-75223	Lab File ID:	J2927.D
Dilution:	1.0			Initial Weight/Volume:	1100 mL
Analysis Date:	06/16/2011 0942			Final Weight/Volume:	1.0 mL
Prep Date:	06/14/2011 1501			Injection Volume:	1 uL

Analyte	Result (ug/L)	Qualifier	MDL	RL
Bis(2-ethylhexyl) phthalate	ND		0.45	1.8
Butyl benzyl phthalate	1.3	J	0.45	4.5
Caprolactam	0.81	J *	0.45	4.5
Carbazole	ND		0.45	4.5
Chrysene	ND		0.15	0.91
Dibenz(a,h)anthracene	ND		0.058	0.45
Dibenzofuran	ND		0.45	4.5
Diethyl phthalate	2.9	J	0.45	4.5
Dimethyl phthalate	0.94	J	0.45	4.5
Di-n-butyl phthalate	1.1	J B	0.55	4.5
Di-n-octyl phthalate	ND		0.66	4.5
Fluoranthene	ND		0.18	0.91
Fluorene	ND		0.073	0.91
Hexachlorobenzene	ND		0.45	0.91
Hexachlorocyclopentadiene	ND		0.45	4.5
Hexachloroethane	ND		0.45	2.7
Indeno[1,2,3-cd]pyrene	ND		0.072	0.45
Isophorone	ND		0.45	4.5
N-Nitrosodi-n-propylamine	ND		0.45	4.5
N-Nitrosodiphenylamine	ND		0.45	4.5
Nitrobenzene	ND		0.45	0.91
Pentachlorophenol	ND		0.45	0.18
Phenanthrene	ND		0.077	4.5
Phenol	ND	*	0.45	4.5
Pyrene	ND		0.17	4.5
Phenyl ether	ND		0.45	4.5
Diphenylamine	ND		0.45	4.5
<hr/>				
Surrogate	%Rec	Qualifier	Acceptance Limits	
2-Fluorophenol	42		15 - 110	
Phenol-d5	26		15 - 110	
Nitrobenzene-d5	71		30 - 130	
2,4,6-Tribromophenol	83		15 - 110	
Terphenyl-d14	94		30 - 130	
2-Fluorobiphenyl	69		30 - 130	

Analytical Data

Client: Olin Corporation

Job Number: 360-34315-1
Sdg Number: 360-34315-1

Client Sample ID: OC-EBK-019

Date Sampled: 06/08/2011 1315
Date Received: 06/08/2011 1750Lab Sample ID: 360-34315-13
Client Matrix: Water**8270D Semivolatile Organic Compounds (GC/MS) Low Level**

Analysis Method:	8270D	Analysis Batch:	360-75365	Instrument ID:	Inst. J
Prep Method:	3510C	Prep Batch:	360-75223	Lab File ID:	J2927.D
Dilution:	1.0			Initial Weight/Volume:	1100 mL
Analysis Date:	06/16/2011 0942			Final Weight/Volume:	1.0 mL
Prep Date:	06/14/2011 1501			Injection Volume:	1 uL

Tentatively Identified Compounds		Number TIC's Found:	10	
Cas Number	Analyte	RT	Est. Result (ug/L)	Qualifier
110-82-7	Cyclohexane	1.52	7.1	T J N
	Unknown	1.65	13	T J
111-76-2	Ethanol, 2-butoxy-	5.62	1.1	T J N
	Benzothiazole	8.46	1.9	T J N
95-16-9	Unknown	8.75	0.93	T J
	Diethyltoluamide	10.35	13	T J N
134-62-3	Unknown	11.09	0.85	T J
	Unknown	11.91	1.3	T J
57-11-4	Octadecanoic acid	12.77	1.4	T J N
	Unknown	14.44	0.81	T J

FORM VII
GC/MS SEMI VOA CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Westfield

Job No.: 360-34316-1

SDG No.: 360-34316-1

Lab Sample ID: CCVIS 360-75752/2

Calibration Date: 06/22/2011 15:38

Instrument ID: Inst. J

Calib Start Date: 06/20/2011 16:38

GC Column: Rtx-5ms ID: 0.25 (um)

Calib End Date: 06/20/2011 20:35

Lab File ID: J2972.D

Conc. Units: ug/L

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Dimethyl phthalate	Ave	1.215	1.258	0.0100	5180	5000	3.6	20.0
2,6-Dinitrotoluene	Lin		0.2806	0.1000	4980	5000	-0.4	20.0
Acenaphthylene	Ave	1.468	1.485	0.9000	5060	5000	1.2	20.0
3-Nitroaniline	Lin1		0.2594	0.0100	4940	5000	-1.2	20.0
Acenaphthene	Ave	1.029	1.011	0.8000	4910	5000	-1.7	20.0
2,4-Dinitrophenol	Lin		0.0678	0.0100	3500	5000	-30.0*	20.0
4-Nitrophenol	Lin2		0.1680	0.0100	4300	5000	-14.0	20.0
2,4-Dinitrotoluene	Lin2		0.3734	0.2000	5260	5000	5.2	20.0
Dibenzofuran	Ave	1.414	1.437	0.8000	5080	5000	1.7	20.0
2,3,4,6-Tetrachlorophenol	Lin		0.2282		4620	5000	-7.6	20.0
Diethyl phthalate	Ave	1.237	1.352	0.0100	5460	5000	9.3	20.0
Fluorene	Ave	1.141	1.061	0.8000	4650	5000	-7.1	20.0
4-Chlorophenyl phenyl ether	Ave	0.5310	0.5022	0.4000	4730	5000	-5.4	20.0
4-Nitroaniline	Lin		0.2144	0.0100	4560	5000	-8.8	20.0
4,6-Dinitro-2-methylphenol	Lin		0.0626	0.0100	3250	5000	-35.0*	20.0
Diphenylamine	Ave	0.5611	0.5154		4590	5000	-8.1	20.0
N-Nitrosodiphenylamine	Ave	0.4795	0.4405	0.0100	5370	5850	-8.1	20.0
1,2-Diphenylhydrazine	Ave	1.016	1.057		5200	5000	4.0	20.0
Azobenzene	Ave	1.016	1.057		5200	5000	4.0	20.0
Benzophenone	Ave	0.6492	0.6443		4960	5000	-0.8	20.0
4-Bromophenyl phenyl ether	Ave	0.1606	0.1622	0.1000	5050	5000	1.0	20.0
Hexachlorobenzene	Lin		0.1502	0.1000	5110	5000	2.2	20.0
Atrazine	Ave	0.1238	0.1243		5020	5000	0.4	20.0
Pentachlorophenol	Lin		0.0751	0.0500	4390	5000	-12.2	20.0
Pentachloronitrobenzene	Lin		0.1017		5580	5000	11.6	20.0
Phenanthrene	Ave	0.9456	0.9133	0.6000	4830	5000	-3.4	20.0
Anthracene	Ave	0.8670	0.8943	0.6000	5160	5000	3.2	20.0
Carbazole	Ave	0.7684	0.7833	0.0100	5100	5000	1.9	20.0
Di-n-butyl phthalate	Ave	1.200	1.097	0.0100	4570	5000	-8.6	20.0
Fluoranthene	Ave	0.8675	0.8653	0.6000	4990	5000	-0.3	20.0
Benzidine	Qua		0.1971		4130	5000	-17.4	20.0
Pyrene	Ave	1.355	1.414	0.6000	5220	5000	4.4	20.0
Butyl benzyl phthalate	Ave	0.6744	0.8115	0.0100	6020	5000	20.3*	20.0
3,3'-Dichlorobenzidine	Lin1		0.2749	0.0100	5080	5000	1.6	20.0
Benzo[a]anthracene	Ave	0.9781	0.9749	0.6000	4980	5000	-0.3	20.0
Chrysene	Lin		1.050	0.6000	5350	5000	7.0	20.0
Bis(2-ethylhexyl) phthalate	Ave	0.9263	1.160	0.0100	6260	5000	25.2*	20.0
Di-n-octyl phthalate	Lin		2.211	0.0100	4920	5000	-1.6	20.0
Benzo[b]fluoranthene	Ave	1.284	1.198	0.7000	4660	5000	-6.7	20.0
Benzo[k]fluoranthene	Ave	1.234	1.108	0.7000	4490	5000	-10.2	20.0
Benzo[a]pyrene	Ave	0.9170	0.9285	0.7000	5060	5000	1.3	20.0

FORM VII
GC/MS SEMI VOA CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Westfield Job No.: 360-34316-1
SDG No.: 360-34316-1
Lab Sample ID: CCVIS 360-75752/2 Calibration Date: 06/22/2011 15:38
Instrument ID: Inst. J Calib Start Date: 06/20/2011 16:38
GC Column: Rtx-5ms ID: 0.25(um) Calib End Date: 06/20/2011 20:35
Lab File ID: J2972.D Conc. Units: ug/L

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Indeno[1,2,3-cd]pyrene	Lin		0.5535	0.5000	6260	5000	25.2*	20.0
Dibenz(a,h)anthracene	Lin		0.4206	0.4000	6210	5000	24.2*	20.0
<u>Benzo[g,h,i]perylene</u>	Ave	0.3396	0.4590	0.4000	6760	5000	35.2*	20.0
2-Fluorophenol	Ave	0.5235	0.4943		4720	5000	-5.6	20.0
Phenol-d5	Ave	1.196	1.210		5060	5000	1.2	20.0
Nitrobenzene-d5	Ave	0.3118	0.3317		5320	5000	6.4	20.0
2-Fluorobiphenyl	Ave	1.234	1.207		4890	5000	-2.2	20.0
2,4,6-Tribromophenol	Lin2		0.0638		4860	5000	-2.8	20.0
Terphenyl-d14	Ave	0.7579	0.8008		5280	5000	5.7	20.0

GC/MS SEMI VOA ANALYSIS RUN LOG

Lab Name: TestAmerica Westfield

Job No.: 360-34316-1

SDG No.: 360-34316-1

Start Date: 06/22/2011 15:08

Instrument ID: Inst. J

End Date: 06/22/2011 23:06

Analysis Batch Number: 75752

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
DFTPP 360-75752/1		06/22/2011 15:08	1	J2971.D	Rtx-5ms 0.25 (um)
CCVIS 360-75752/2		06/22/2011 15:38	1	J2972.D	Rtx-5ms 0.25 (um)
360-34316-1	OC-SS-452-0.0/1.0-XXX	06/22/2011 21:07	5	J2983.D	Rtx-5ms 0.25 (um)
ZZZZZ		06/22/2011 21:36	10		Rtx-5ms 0.25 (um)
360-34316-4 DL	OC-PE-SS1507-SVOC DL	06/22/2011 22:06	5	J2985.D	Rtx-5ms 0.25 (um)
360-34316-7	OC-SS-433-0.0/1.0-XXX	06/22/2011 22:36	5	J2986.D	Rtx-5ms 0.25 (um)
360-34316-7 DL	OC-SS-433-0.0/1.0-XXX DL	06/22/2011 23:06	10	J2987.D	Rtx-5ms 0.25 (um)

Quality Control Results

Client: Olin Corporation

Job Number: 360-34316-1
Sdg Number: 360-34316-1

Matrix Spike/

Matrix Spike Duplicate Recovery Report - Batch: 360-75464

OC-S8-448-0.0/1.0-x+1

Method: 8270D

Preparation: 3546

MS Lab Sample ID:	360-34316-9	Analysis Batch:	360-75600	Instrument ID:	Inst. J
Client Matrix:	Solid	Prep Batch:	360-75464	Lab File ID:	J2967.D
Dilution:	5.0	Leach Batch:	N/A	Initial Weight/Volume:	40.32 g
Analysis Date:	06/21/2011 0458			Final Weight/Volume:	1.0 mL
Prep Date:	06/17/2011 1725			Injection Volume:	1 uL
Leach Date:	N/A				

MSD Lab Sample ID:	360-34316-9	Analysis Batch:	360-75600	Instrument ID:	Inst. J
Client Matrix:	Solid	Prep Batch:	360-75464	Lab File ID:	J2968.D
Dilution:	5.0	Leach Batch:	N/A	Initial Weight/Volume:	40.46 g
Analysis Date:	06/21/2011 0528			Final Weight/Volume:	1.0 mL
Prep Date:	06/17/2011 1725			Injection Volume:	1 uL
Leach Date:	N/A				

Analyte	% Rec.						
	MS	MSD	Limit	RPD	RPD Limit	MS Qual	MSD Qual
1,2,4,5-Tetrachlorobenzene	66	76	40 - 140	15	30		
1,2,4-Trichlorobenzene	55	66	40 - 140	18	30	J	
1,2-Dichlorobenzene	56	71	40 - 140	24	30	J	
1,3-Dichlorobenzene	54	68	40 - 140	22	30	J	
1,4-Dichlorobenzene	55	69	40 - 140	22	30	J	
N-Nitrosodimethylamine	53	68	40 - 140	24	30	J	
2,2'-oxybis[1-chloropropane]	60	77	40 - 140	25	30	J	
2,4,5-Trichlorophenol	76	84	30 - 130	9	30		
2,4,6-Trichlorophenol	77	82	30 - 130	5	30		
2,4-Dichlorophenol	64	76	30 - 130	17	30		
2,4-Dimethylphenol	97	110	30 - 130	12	30		
2,4-Dinitrophenol	110	119	30 - 130	8	30		
2,4-Dinitrotoluene	78	87	40 - 140	10	30		
2,6-Dinitrotoluene	68	80	40 - 140	16	30		
2-Chloronaphthalene	58	63	40 - 140	8	30	J	
2-Chlorophenol	66	83	30 - 130	22	30		
2-Methylnaphthalene	79	95	40 - 140	12	30		
2-Methylphenol	70	86	30 - 130	20	30		
2-Nitroaniline	84	91	40 - 140	7	30	J	J
2-Nitrophenol	67	78	30 - 130	14	30		
3 & 4 Methylphenol	83	94	30 - 130	12	30		
3,3'-Dichlorobenzidine	0	0	40 - 140	NC	30	F	F
3-Nitroaniline	69	68	40 - 140	2	30	J	J
4,6-Dinitro-2-methylphenol	88	93	30 - 130	4	30	J	J
4-Bromophenyl phenyl ether	78	91	40 - 140	15	30		
4-Chloro-3-methylphenol	79	86	30 - 130	9	30	J	J
4-Chloroaniline	38	42	40 - 140	11	30	J F	J
4-Chlorophenyl phenyl ether	80	81	40 - 140	0	30		
4-Nitroaniline	67	81	40 - 140	18	30	J	J
4-Nitrophenol	84	90	30 - 130	6	30	J	J
Acenaphthene	87	94	40 - 140	7	30		
Acenaphthylene	95	88	40 - 140	6	30		
Acetophenone	76	93	40 - 140	20	30		

Quality Control Results

Client: Olin Corporation

Job Number: 360-34316-1
Sdg Number: 360-34316-1

**Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 360-75464**

**Method: 8270D
Preparation: 3546**

MS Lab Sample ID:	360-34316-9	Analysis Batch:	360-75600	Instrument ID:	Inst. J
Client Matrix:	Solid	Prep Batch:	360-75464	Lab File ID:	J2967.D
Dilution:	5.0	Leach Batch:	N/A	Initial Weight/Volume:	40.32 g
Analysis Date:	06/21/2011 0458			Final Weight/Volume:	1.0 mL
Prep Date:	06/17/2011 1725			Injection Volume:	1 uL
Leach Date:	N/A				

MSD Lab Sample ID:	360-34316-9	Analysis Batch:	360-75600	Instrument ID:	Inst. J
Client Matrix:	Solid	Prep Batch:	360-75464	Lab File ID:	J2968.D
Dilution:	5.0	Leach Batch:	N/A	Initial Weight/Volume:	40.46 g
Analysis Date:	06/21/2011 0528			Final Weight/Volume:	1.0 mL
Prep Date:	06/17/2011 1725			Injection Volume:	1 uL
Leach Date:	N/A				

Analyte	<u>% Rec.</u>		Limit	RPD	RPD Limit	MS Qual	MSD Qual
	MS	MSD					
Aniline	0	0	40 - 140	NC	30	F	F
Anthracene	87	96	40 - 140	8	30		
Azobenzene	50	59	40 - 140	15	30	J	J
Benzo[a]anthracene	103	117	40 - 140	6	30		
Benzo[a]pyrene	109	110	40 - 140	0	30		
Benzo[b]fluoranthene	111	173	40 - 140	19	30		F
Benzo[g,h,i]perylene	124	154	40 - 140	11	30		F
Benzo[k]fluoranthene	69	63	40 - 140	4	30		
Benzoic acid	128	104	30 - 130	12	30	J	J
Benzyl alcohol	67	84	30 - 130	22	30	J	J
Bis(2-chloroethoxy)methane	69	76	40 - 140	10	30		
Bis(2-chloroethyl)ether	61	80	40 - 140	26	30	J	
Bis(2-ethylhexyl) phthalate	198	383	40 - 140	19	30	4	4
Butyl benzyl phthalate	101	105	40 - 140	3	30		
Carbazole	92	101	40 - 140	9	30		
Chrysene	96	139	40 - 140	16	30		
Dibenz(a,h)anthracene	181	166	40 - 140	9	30	F	F
Dibenzofuran	75	88	40 - 140	12	30		
Diethyl phthalate	80	84	40 - 140	4	30		
Dimethyl phthalate	72	84	40 - 140	15	30		
Di-n-butyl phthalate	83	92	40 - 140	10	30		
Di-n-octyl phthalate	112	118	40 - 140	5	30		
Fluoranthene	53	123	40 - 140	21	30		
Fluorene	94	98	40 - 140	4	30		
Hexachlorobenzene	75	79	40 - 140	5	30		
Hexachlorobutadiene	55	74	40 - 140	28	30	J	
Hexachlorocyclopentadiene	0	20	40 - 140	NC	30	F	J F
Hexachloroethane	54	71	40 - 140	26	30	J	
Indeno[1,2,3-cd]pyrene	125	144	40 - 140	7	30		F
Isophorone	62	71	40 - 140	12	30		
Naphthalene	86	78	40 - 140	5	30		
Nitrobenzene	64	76	40 - 140	18	30		
N-Nitrosodi-n-propylamine	71	94	40 - 140	28	30		

Analytical Data

Client: Olin Corporation

Job Number: 360-34316-1
Sdg Number: 360-34316-1

Client Sample ID: OC-SS-452-0.0/1.0-XXX

Lab Sample ID: 360-34316-1

Date Sampled: 06/08/2011 1135

Client Matrix: Solid

% Moisture: 3.7

Date Received: 06/08/2011 1750

8270D Semivolatile Organic Compounds (GC/MS) Low Level

Analysis Method:	8270D	Analysis Batch:	360-75752	Instrument ID:	Inst. J
Prep Method:	3546	Prep Batch:	360-75464	Lab File ID:	J2983.D
Dilution:	5.0			Initial Weight/Volume:	40.77 g
Analysis Date:	06/22/2011 2107			Final Weight/Volume:	1.0 mL
Prep Date:	06/17/2011 1725			Injection Volume:	1 uL

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
1,1'-Biphenyl		ND		38	130
1,2,4,5-Tetrachlorobenzene		ND		38	130
1,2,4-Trichlorobenzene		ND		38	130
1,2-Dichlorobenzene		ND		38	130
1,3-Dichlorobenzene		ND		38	130
1,4-Dichlorobenzene		ND		38	130
1-Methylnaphthalene		ND		38	130
2,2'-oxybis[1-chloropropane]		ND		38	130
2,3,4,6-Tetrachlorophenol		ND		38	130
2,4,5-Trichlorophenol		ND		38	130
2,4,6-Trichlorophenol		ND		38	130
2,4-Dichlorophenol		ND		38	130
2,4-Dimethylphenol		ND		50	130
2,4-Dinitrophenol		ND		38	130
2,4-Dinitrotoluene		ND		38	130
2,6-Dinitrotoluene		ND		38	130
2-Chloronaphthalene		ND		38	130
2-Chlorophenol		ND		38	130
2-Methylnaphthalene		43	J	38	130
2-Methylphenol		ND		76	130
2-Nitroaniline		ND		38	640
2-Nitrophenol		ND		38	130
3 & 4 Methylphenol		ND		38	130
3,3'-Dichlorobenzidine		ND		38	250
3-Nitroaniline		ND		38	640
4,6-Dinitro-2-methylphenol		ND		38	640
4-Bromophenyl phenyl ether		ND		38	130
4-Chloro-3-methylphenol		ND		38	250
4-Chloroaniline		ND		38	250
4-Chlorophenyl phenyl ether		ND		38	130
4-Nitroaniline		ND		38	640
4-Nitrophenol		ND		38	640
Acenaphthene		ND		38	130
Acenaphthylene		ND		38	130
Acetophenone		ND		38	130
Aniline		ND		65	130
Anthracene		ND		38	130
Atrazine		ND		38	130
Azobenzene		ND		38	130
Benzaldehyde		59	J	38	130
Benzo[a]anthracene		63	J	38	130
Benzo[a]pyrene		66	J	38	130
Benzo[b]fluoranthene		130		38	130
Benzo[g,h,i]perylene		91	J	38	130
Benzo[k]fluoranthene		50	J	38	130
Benzoic acid		200	J B	57	640

Analytical Data

Client: Olin Corporation

Job Number: 360-34316-1
Sdg Number: 360-34316-1

Client Sample ID: OC-SS-452-0.0/1.0-XXX

Lab Sample ID: 360-34316-1
Client Matrix: Solid

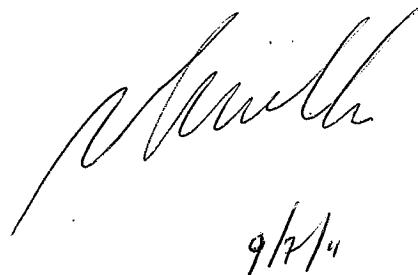
% Moisture: 3.7

Date Sampled: 06/08/2011 1135
Date Received: 06/08/2011 1750**8270D Semivolatile Organic Compounds (GC/MS) Low Level**

Analysis Method:	8270D	Analysis Batch:	360-75752	Instrument ID:	Inst. J
Prep Method:	3546	Prep Batch:	360-75464	Lab File ID:	J2983.D
Dilution:	5.0			Initial Weight/Volume:	40.77 g
Analysis Date:	06/22/2011 2107			Final Weight/Volume:	1.0 mL
Prep Date:	06/17/2011 1725			Injection Volume:	1 uL

Tentatively Identified Compounds **Number TIC's Found:** 10

Cas Number	Analyte	RT	Est. Result (ug/Kg)	Qualifier
	Unknown	3.12	3400	T J N
	Unknown.	12.68	150	T J N
	Unknown	13.14	230	T J N
629-96-9	1-Eicosanol	13.33	140	T J N
2885-0-9	1-Octadecanethiol	13.95	350	T J N
71502-22-2	9-Hexacosene	14.49	1200	T J N
26603-23-6	p,p"-Diethylphenylamine	14.68	5900	T J N
629-92-5	Nonadecane	14.98	260	T J N
83-47-6	.gamma.-Sitosterol	15.61	340	T J N
	Unknown	16.43	120	T J N


9/21/11

Analytical Data

Client: Olin Corporation

Job Number: 360-34316-1
Sdg Number: 360-34316-1

Client Sample ID: OC-SS-433-0.0/1.0-XXX

Lab Sample ID: 360-34316-7

Client Matrix: Solid

% Moisture: 4.8

Date Sampled: 06/08/2011 0845
Date Received: 06/08/2011 1750

8270D Semivolatile Organic Compounds (GC/MS) Low Level

Analysis Method:	8270D	Analysis Batch:	360-75752	Instrument ID:	Inst. J
Prep Method:	3546	Prep Batch:	360-75464	Lab File ID:	J2986.D
Dilution:	5.0			Initial Weight/Volume:	40.62 g
Analysis Date:	06/22/2011 2236			Final Weight/Volume:	1.0 mL
Prep Date:	06/17/2011 1725			Injection Volume:	1 uL

Analyte	Dry Wt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
1,1'-Biphenyl		42	J	39	130
1,2,4,5-Tetrachlorobenzene		ND		39	130
1,2,4-Trichlorobenzene		ND		39	130
1,2-Dichlorobenzene		ND		39	130
1,3-Dichlorobenzene		ND		39	130
1,4-Dichlorobenzene		ND		39	130
1-Methylnaphthalene		90	J	39	130
2,2'-oxybis[1-chloropropane]		ND		39	130
2,3,4,6-Tetrachlorophenol		ND		39	130
2,4,5-Trichlorophenol		ND		39	130
2,4,6-Trichlorophenol		ND		39	130
2,4-Dichlorophenol		ND		39	130
2,4-Dimethylphenol		ND		51	130
2,4-Dinitrophenol		ND		39	130
2,4-Dinitrotoluene		ND		39	130
2,6-Dinitrotoluene		ND		39	130
2-Chloronaphthalene		ND		39	130
2-Chlorophenol		ND		39	130
2-Methylnaphthalene		130		39	130
2-Methylphenol		ND		78	130
2-Nitroaniline		ND		39	650
2-Nitrophenol		ND		39	130
3 & 4 Methylphenol		ND		39	130
3,3'-Dichlorobenzidine		ND		39	260
3-Nitroaniline		ND		39	650
4,6-Dinitro-2-methylphenol		ND	J	39	650
4-Bromophenyl phenyl ether		ND		39	130
4-Chloro-3-methylphenol		ND		39	260
4-Chloroaniline		ND		39	260
4-Chlorophenyl phenyl ether		ND		39	130
4-Nitroaniline		ND		39	650
4-Nitrophenol		ND		39	650
Acenaphthene		ND		39	130
Acenaphthylene		320		39	130
Acetophenone		ND		39	130
Aniline		ND		66	130
Anthracene		300		39	130
Atrazine		ND		39	130
Azobenzene		ND		39	130
Benzaldehyde		ND		39	130
Benzo[a]anthracene		1400		39	130
Benzo[a]pyrene		920		39	130
Benzo[b]fluoranthene		1800		39	130
Benzo[g,h,i]perylene		660	J	39	130
Benzo[k]fluoranthene		600		39	130
Benzoic acid		230	JB ENB	58	650



Analytical Data

Client: Olin Corporation

Job Number: 360-34316-1
Sdg Number: 360-34316-1

Client Sample ID: OC-SS-433-0.0/1.0-XXX

Date Sampled: 06/08/2011 0845

Lab Sample ID: 360-34316-7

Date Received: 06/08/2011 1750

Client Matrix: Solid

% Moisture: 4.8

8270D Semivolatile Organic Compounds (GC/MS) Low Level

Analysis Method:	8270D	Analysis Batch:	360-75752	Instrument ID:	Inst. J
Prep Method:	3546	Prep Batch:	360-75464	Lab File ID:	J2986.D
Dilution:	5.0			Initial Weight/Volume:	40.62 g
Analysis Date:	06/22/2011 2236			Final Weight/Volume:	1.0 mL
Prep Date:	06/17/2011 1725			Injection Volume:	1 uL

Tentatively Identified Compounds **Number TIC's Found:** 10

Cas Number	Analyte	RT	Est. Result (ug/Kg)	Qualifier
	Unknown	3.13	3100	T J
	Unknown	11.38	430	J N
57-10-3	n-Hexadecanoic acid	11.40	490	T J N
84-65-1	9,10-Anthracenedione	11.58	430	T J N
5737-13-3	Cyclopenta(def)phenanthrenone	11.89	310	T J N
239-35-0	Benzo[b]naphtho[2,1-d]thiophene	13.12	370	T J N
1740-19-8	1-Phenanthrenecarboxylic acid, 1,2,3,4,4	13.22	480	T J N
	Unknown	14.43	340	T J
2885-0-9	1-Octadecanethiol	14.49	630	T J N
192-97-2	Benzo[e]pyrene	14.52	790	J N

Analytical Data

Client: Olin Corporation

Job Number: 360-34316-1
Sdg Number: 360-34316-1

Client Sample ID: OC-SS-448-0.0/1.0-DUP

Lab Sample ID: 360-34316-8
Client Matrix: Solid

% Moisture: 4.6

Date Sampled: 06/08/2011 0935
Date Received: 06/08/2011 1750

8270D Semivolatile Organic Compounds (GC/MS) Low Level

Analysis Method:	8270D	Analysis Batch:	360-75600	Instrument ID:	Inst. J
Prep Method:	3546	Prep Batch:	360-75464	Lab File ID:	J2965.D
Dilution:	5.0			Initial Weight/Volume:	40.73 g
Analysis Date:	06/21/2011 0359			Final Weight/Volume:	1.0 mL
Prep Date:	06/17/2011 1725			Injection Volume:	1 uL

Analyte	Dry Wt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
1,1'-Biphenyl		ND		39	130
1,2,4,5-Tetrachlorobenzene		ND		39	130
1,2,4-Trichlorobenzene		ND		39	130
1,2-Dichlorobenzene		ND		39	130
1,3-Dichlorobenzene		ND		39	130
1,4-Dichlorobenzene		ND		39	130
1-Methylnaphthalene		74	J	39	130
2,2'-oxybis[1-chloropropane]		ND		39	130
2,3,4,6-Tetrachlorophenol		ND		39	130
2,4,5-Trichlorophenol		ND		39	130
2,4,6-Trichlorophenol		ND		39	130
2,4-Dichlorophenol		ND		51	130
2,4-Dimethylphenol		ND		39	130
2,4-Dinitrophenol		ND		39	130
2,4-Dinitrotoluene		ND		39	130
2,6-Dinitrotoluene		ND		39	130
2-Chloronaphthalene		ND		39	130
2-Chlorophenol		ND		39	130
2-Methylnaphthalene		94	J	39	130
2-Methylphenol		ND		77	130
2-Nitroaniline		ND		39	640
2-Nitrophenol		ND		39	130
3 & 4 Methylphenol		ND		39	130
3,3'-Dichlorobenzidine		ND		39	260
3-Nitroaniline		ND		39	640
4,6-Dinitro-2-methylphenol		ND		39	640
4-Bromophenyl phenyl ether		ND		39	130
4-Chloro-3-methylphenol		ND		39	260
4-Chloroaniline		ND	J	39	260
4-Chlorophenyl phenyl ether		ND		39	130
4-Nitroaniline		ND		39	640
4-Nitrophenol		ND		39	130
Acenaphthene		65	J	39	130
Acenaphthylene		ND		39	130
Acetophenone		ND		66	130
Aniline		ND		39	130
Anthracene		42	J	39	130
Atrazine		ND		39	130
Azobenzene		ND		39	130
Benzaldehyde		50	J	39	130
Benzo[a]anthracene		220		39	130
Benzo[a]pyrene		200		39	130
Benzo[b]fluoranthene		390	J	39	130
Benzo[g,h,i]perylene		290	J	39	130
Benzo[k]fluoranthene		200		39	130
Benzoic acid		160	JEB	58	640

06/29/2011

Analytical Data

Client: Olin Corporation

Job Number: 360-34316-1
Sdg Number: 360-34316-1

Client Sample ID: OC-SS-448-0.0/1.0-DUP

Lab Sample ID: 360-34316-8

Date Sampled: 06/08/2011 0935

Client Matrix: Solid

% Moisture: 4.6

Date Received: 06/08/2011 1750

8270D Semivolatile Organic Compounds (GC/MS) Low Level

Analysis Method:	8270D	Analysis Batch:	360-75600	Instrument ID:	Inst. J
Prep Method:	3546	Prep Batch:	360-75464	Lab File ID:	J2965.D
Dilution:	5.0			Initial Weight/Volume:	40.73 g
Analysis Date:	06/21/2011 0359			Final Weight/Volume:	1.0 mL
Prep Date:	06/17/2011 1725			Injection Volume:	1 uL

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Benzophenone		ND		39	130
Benzyl alcohol		ND		110	260
Bis(2-chloroethoxy)methane		ND		39	130
Bis(2-chloroethyl)ether		ND		39	130
Bis(2-ethylhexyl) phthalate		1800		39	130
Butyl benzyl phthalate		ND		39	130
Caprolactam		ND		39	130
Carbazole		ND		39	130
Chrysene		300		39	130
Dibenz(a,h)anthracene		ND		39	130
Dibenzofuran		57	J	39	130
Diethyl phthalate		ND		39	130
Dimethyl phthalate		ND		39	130
Di-n-butyl phthalate		ND		110	130
Di-n-octyl phthalate		ND		65	130
Fluoranthene		380		39	130
Fluorene		ND		39	130
Hexachlorobenzene		ND		39	130
Hexachlorobutadiene		ND		39	130
Hexachlorocyclopentadiene		ND R		39	260
Hexachloroethane		ND		39	130
Indeno[1,2,3-cd]pyrene		270 J		39	130
Isophorone		ND		39	130
Naphthalene		120	J	39	130
Nitrobenzene		ND		39	130
N-Nitrosodi-n-propylamine		ND		39	130
N-Nitrosodiphenylamine		ND		39	130
Pentachlorophenol		ND		39	130
Phenanthrene		180		39	130
Phenol		ND		66	130
Diphenyl oxide		71	J	39	130
Pyrene		410		39	130
N-Nitrosodimethylamine		ND		46	130
Diphenylamine		ND		39	130
Surrogate		%Rec	Qualifier	Acceptance Limits	
2,4,6-Tribromophenol		80		30 - 130	
2-Fluorobiphenyl		74		30 - 130	
2-Fluorophenol		68		30 - 130	
Nitrobenzene-d5		67		30 - 130	
Phenol-d5		76		30 - 130	
Terphenyl-d14		95		30 - 130	

Analytical Data

Client: Olin Corporation

Job Number: 360-34316-1
Sdg Number: 360-34316-1

Client Sample ID: OC-SS-448-0.0/1.0-DUP

Lab Sample ID: 360-34316-8

Date Sampled: 06/08/2011 0935

Client Matrix: Solid

% Moisture: 4.6

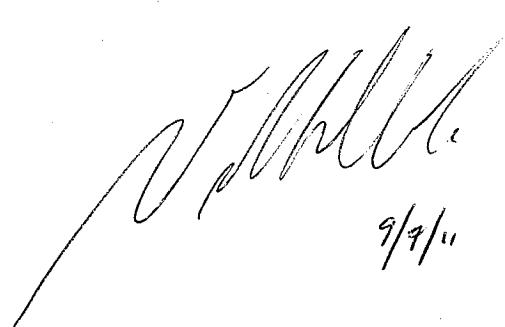
Date Received: 06/08/2011 1750

8270D Semivolatile Organic Compounds (GC/MS) Low Level

Analysis Method:	8270D	Analysis Batch:	360-75600	Instrument ID:	Inst. J
Prep Method:	3546	Prep Batch:	360-75464	Lab File ID:	J2965.D
Dilution:	5.0			Initial Weight/Volume:	40.73 g
Analysis Date:	06/21/2011 0359			Final Weight/Volume:	1.0 mL
Prep Date:	06/17/2011 1725			Injection Volume:	1 uL

Tentatively Identified Compounds Number TIC's Found: 10

Cas Number	Analyte	RT	Est. Result (ug/Kg)	Qualifier
71-43-2	Benzene	1.19	120	T J N
	Unknown	3.62	3600	T J N
	Unknown	10.76	120	T J N
82-5-3	7H-Benz[de]anthracen-7-one	13.24	110	T J N
	Unknown	13.55	150	T J N
2885-0-9	1-Octadecanethiol	14.15	240	T J N
629-78-7	Heptadecane	14.68	720	T J N
198-55-0	Perylene	14.74	280	T J N
112-95-8	Unknown	14.88	340	T J N
	Eicosane	15.19	220	T J N



9/9/11

Analytical Data

Client: Olin Corporation

Job Number: 360-34316-1
Sdg Number: 360-34316-1

Client Sample ID: OC-SS-448-0.0/1.0-XXX

Lab Sample ID: 360-34316-9

Date Sampled: 06/08/2011 0935
Date Received: 06/08/2011 1750

Client Matrix: Solid

% Moisture: 12.6

8270D Semivolatile Organic Compounds (GC/MS) Low Level

Analysis Method:	8270D	Analysis Batch:	360-75600	Instrument ID:	Inst. J
Prep Method:	3546	Prep Batch:	360-75464	Lab File ID:	J2966.D
Dilution:	5.0			Initial Weight/Volume:	40.22 g
Analysis Date:	06/21/2011 0429			Final Weight/Volume:	1.0 mL
Prep Date:	06/17/2011 1725			Injection Volume:	1 uL

Analyte	Dry Wt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
1,1'-Biphenyl		ND		43	140
1,2,4,5-Tetrachlorobenzene		ND		43	140
1,2,4-Trichlorobenzene		ND		43	140
1,2-Dichlorobenzene		ND		43	140
1,3-Dichlorobenzene		ND		43	140
1,4-Dichlorobenzene		ND		43	140
1-Methylnaphthalene		86	J	43	140
2,2'-oxybis[1-chloropropane]		ND		43	140
2,3,4,6-Tetrachlorophenol		ND		43	140
2,4,5-Trichlorophenol		ND		43	140
2,4,6-Trichlorophenol		ND		43	140
2,4-Dichlorophenol		ND		56	140
2,4-Dimethylphenol		ND		43	140
2,4-Dinitrophenol		ND		43	140
2,4-Dinitrotoluene		ND		43	140
2,6-Dinitrotoluene		ND		43	140
2-Chloronaphthalene		ND		43	140
2-Chlorophenol		ND		43	140
2-Methylnaphthalene		110	J	43	140
2-Methylphenol		ND		85	140
2-Nitroaniline		ND		43	710
2-Nitrophenol		ND		43	140
3 & 4 Methylphenol		ND		43	140
3,3'-Dichlorobenzidine		ND	R	43	280
3-Nitroaniline		ND		43	710
4,6-Dinitro-2-methylphenol		ND		43	710
4-Bromophenyl phenyl ether		ND		43	140
4-Chloro-3-methylphenol		ND		43	280
4-Chloroaniline		ND	J	43	280
4-Chlorophenyl phenyl ether		ND		43	140
4-Nitroaniline		ND		43	710
4-Nitrophenol		ND		43	140
Acenaphthene		79	J	43	140
Acenaphthylene		ND		43	140
Acetophenone		ND	R	73	140
Aniline		58	J	43	140
Anthracene		ND		43	140
Atrazine		ND		43	140
Azobenzene		ND		43	140
Benzaldehyde		ND		43	140
Benzo[a]anthracene		270		43	140
Benzo[a]pyrene		220		43	140
Benzo[b]fluoranthene		410	J	43	140
Benzo[g,h,i]perylene		310	J	43	140
Benzo[k]fluoranthene		240		43	140
Benzoic acid		190	J	64	710

Analytical Data

Client: Olin Corporation

Job Number: 360-34316-1
Sdg Number: 360-34316-1

Client Sample ID: OC-SS-448-0.0/1.0-XXX

Lab Sample ID: 360-34316-9

Client Matrix: Solid

% Moisture: 12.6

Date Sampled: 06/08/2011 0935
Date Received: 06/08/2011 1750

8270D Semivolatile Organic Compounds (GC/MS) Low Level

Analysis Method:	8270D	Analysis Batch:	360-75600	Instrument ID:	Inst. J
Prep Method:	3546	Prep Batch:	360-75464	Lab File ID:	J2966.D
Dilution:	5.0			Initial Weight/Volume:	40.22 g
Analysis Date:	06/21/2011 0429			Final Weight/Volume:	1.0 mL
Prep Date:	06/17/2011 1725			Injection Volume:	1 uL

Analyte	Dry Wt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Benzophenone		ND		43	140
Benzyl alcohol		ND		120	280
Bis(2-chloroethoxy)methane		ND		43	140
Bis(2-chloroethyl)ether		ND		43	140
Bis(2-ethylhexyl) phthalate		1600		43	140
Butyl benzyl phthalate		ND		43	140
Caprolactam		ND		43	140
Carbazole		ND		43	140
Chrysene		350		43	140
Dibenz(a,h)anthracene		ND		43	140
Dibenzofuran		57	J	43	140
Diethyl phthalate		ND		43	140
Dimethyl phthalate		ND		43	140
Di-n-butyl phthalate		ND		120	140
Di-n-octyl phthalate		ND		72	140
Fluoranthene		540		43	140
Fluorene		ND		43	140
Hexachlorobenzene		ND		43	140
Hexachlorobutadiene		ND		43	140
Hexachlorocyclopentadiene		ND		43	280
Hexachloroethane		ND		43	140
Indeno[1,2,3-cd]pyrene		290	J	43	140
Isophorone		ND		43	140
Naphthalene		180		43	140
Nitrobenzene		ND		43	140
N-Nitrosodi-n-propylamine		ND		43	140
N-Nitrosodiphenylamine		ND		43	140
Pentachlorophenol		ND		43	140
Phenanthrene		200		43	140
Phenol		ND		73	140
Diphenyl oxide		79	J	43	140
Pyrene		580		43	140
N-Nitrosodimethylamine		ND		50	140
Diphenylamine		ND		43	140

Surrogate	%Rec	Qualifier	Acceptance Limits
2,4,6-Tribromophenol	72		30 - 130
2-Fluorobiphenyl	66		30 - 130
2-Fluorophenol	59		30 - 130
Nitrobenzene-d5	69		30 - 130
Phenol-d5	61		30 - 130
Terphenyl-d14	87		30 - 130

Analytical Data

Client: Olin Corporation

Job Number: 360-34316-1
Sdg Number: 360-34316-1

Client Sample ID: OC-SS-448-0.0/1.0-XXX

Lab Sample ID: 360-34316-9

Client Matrix: Solid

% Moisture: 12.6

Date Sampled: 06/08/2011 0935
Date Received: 06/08/2011 1750**8270D Semivolatile Organic Compounds (GC/MS) Low Level**

Analysis Method:	8270D	Analysis Batch:	360-75600	Instrument ID:	Inst. J
Prep Method:	3546	Prep Batch:	360-75464	Lab File ID:	J2966.D
Dilution:	5.0			Initial Weight/Volume:	40.22 g
Analysis Date:	06/21/2011 0429			Final Weight/Vouime:	1.0 mL
Prep Date:	06/17/2011 1725			Injection Volume:	1 uL

Tentatively Identified Compounds		Number TIC's Found:	10	
Cas Number	Analyte	RT	Est. Result (ug/Kg)	Qualifier
71-43-2	Benzene	1.20	110	T J N
	Unknown	3.62	3900	T J N
	Unknown	13.24	120	T J N
1000130-97-9	E-15-Heptadecenal	13.54	150	T J N
3452-7-1	1-Eicosene	14.15	240	T J N
71502-22-2	9-Hexacosene	14.69	720	T J N
198-55-0	Perylene	14.74	250	T J N
593-45-3	Octadecane	14.89	480	T J N
	Unknown	15.19	270	T J N
	Unknown	15.85	180	T J N


John M. Miller

9/7/11

Table 2.2
Final Results Summary - VOCs
June 2011 Soil Sampling
Olin Chemical Superfund Site
Wilmington, Massachusetts

Frac	Method	Analyte	Loc Name Field Sample ID Field Sample Date QC Code	SS-433		SS-448		SS-448		SS-452	
				Result	Qual	Result	Qual	Result	Qual	Result	Qual
Lab Sample Delivery Group	Units			360-34316-1		360-34316-1		360-34316-1		360-34316-1	
N	SW8260C	1,1,1,2-Tetrachloroethane	ug/Kg	3.9 U		3.1 U		2.8 U		2.7 U	
N	SW8260C	1,1,1-Trichloroethane	ug/Kg	3.9 U		3.1 U		2.8 U		2.7 U	
N	SW8260C	1,1,2,2-Tetrachloroethane	ug/Kg	3.9 U		3.1 U		2.8 U		2.7 U	
N	SW8260C	1,1,2-Trichloro-1,2,2-Trifluoroethane	ug/Kg	19 U		16 U		14 U		14 U	
N	SW8260C	1,1,2-Trichloroethane	ug/Kg	3.9 U		3.1 U		2.8 U		2.7 U	
N	SW8260C	1,1-Dichloroethane	ug/Kg	3.9 U		3.1 U		2.8 U		2.7 U	
N	SW8260C	1,1-Dichloroethene	ug/Kg	3.9 U		3.1 U		2.8 U		2.7 U	
N	SW8260C	1,1-Dichloropropene	ug/Kg	3.9 U		3.1 U		2.8 U		2.7 U	
N	SW8260C	1,2,3-Trichlorobenzene	ug/Kg	3.9 U		3.1 UJ		2.8 UJ		2.7 U	
N	SW8260C	1,2,3-Trichloropropane	ug/Kg	3.9 U		3.1 U		2.8 U		2.7 U	
N	SW8260C	1,2,4-Trichlorobenzene	ug/Kg	3.9 U		3.1 UJ		2.8 UJ		2.7 U	
N	SW8260C	1,2,4-Trimethylbenzene	ug/Kg	3.9 UJ		3.1 UJ		2.8 UJ		2.7 UJ	
N	SW8260C	1,2-Dibromo-3-chloropropane	ug/Kg	39 U		31 U		28 U		27 U	
N	SW8260C	1,2-Dibromoethane	ug/Kg	3.9 U		3.1 U		2.8 U		2.7 U	
N	SW8260C	1,2-Dichlorobenzene	ug/Kg	3.9 U		3.1 U		2.8 U		2.7 U	
N	SW8260C	1,2-Dichloroethane	ug/Kg	3.9 U		3.1 U		2.8 U		2.7 U	
N	SW8260C	1,2-Dichloropropane	ug/Kg	3.9 U		3.1 U		2.8 U		2.7 U	
N	SW8260C	1,3,5-Trimethylbenzene	ug/Kg	3.9 U		3.1 U		2.8 U		2.7 U	
N	SW8260C	1,3-Dichlorobenzene	ug/Kg	3.9 U		3.1 UJ		2.8 UJ		2.7 U	
N	SW8260C	1,3-Dichloropropane	ug/Kg	3.9 U		3.1 U		2.8 U		2.7 U	
N	SW8260C	1,4-Dichlorobenzene	ug/Kg	3.9 U		3.1 U		2.8 U		2.7 U	
N	SW8260C	1,4-Dioxane	ug/Kg	390 UJ		310 UJ		280 UJ		270 UJ	
N	SW8260C	2,2-Dichloropropane	ug/Kg	3.9 U		3.1 U		2.8 U		2.7 U	
N	SW8260C	2,4,4-Trimethyl-1-pentene	ug/Kg	7.8 U		6.3 U		5.7 U		5.4 U	
N	SW8260C	2,4,4-Trimethyl-2-pentene	ug/Kg	7.8 U		6.3 U		5.7 U		5.4 U	
N	SW8260C	2-Butanone	ug/Kg	39 U		31 U		28 U		27 U	
N	SW8260C	2-Chlorotoluene	ug/Kg	3.9 U		3.1 U		2.8 U		2.7 U	
N	SW8260C	2-Hexanone	ug/Kg	39 U		31 U		28 U		27 U	
N	SW8260C	4-Chlorotoluene	ug/Kg	3.9 U		3.1 U		2.8 U		2.7 U	
N	SW8260C	4-iso-Propyltoluene	ug/Kg	3.9 U		3.1 U		2.8 U		2.7 U	
N	SW8260C	4-Methyl-2-pentanone	ug/Kg	39 U		31 U		28 U		27 U	
N	SW8260C	Acetic acid, methyl ester	ug/Kg	78 U		63 U		57 U		54 U	
N	SW8260C	Acetone	ug/Kg	390 U		310 U		280 U		270 U	
N	SW8260C	Benzene	ug/Kg	3.9 U		3.1 U		2.8 U		2.7 U	
N	SW8260C	Bromobenzene	ug/Kg	3.9 U		3.1 U		2.8 U		2.7 U	
N	SW8260C	Bromochloromethane	ug/Kg	3.9 U		3.1 U		2.8 U		2.7 U	
N	SW8260C	Bromodichloromethane	ug/Kg	3.9 U		3.1 U		2.8 U		2.7 U	
N	SW8260C	Bromoform	ug/Kg	3.9 U		3.1 U		2.8 U		2.7 U	
N	SW8260C	Bromomethane	ug/Kg	7.8 U		6.3 U		5.7 U		5.4 U	
N	SW8260C	Butane, 2-methoxy-2-methyl-	ug/Kg	3.9 U		3.1 U		2.8 U		2.7 U	
N	SW8260C	Carbon disulfide	ug/Kg	3.9 U		3.1 U		2.8 U		2.7 U	
N	SW8260C	Carbon tetrachloride	ug/Kg	3.9 U		3.1 U		2.8 U		2.7 U	
N	SW8260C	Chlorobenzene	ug/Kg	3.9 U		3.1 U		2.8 U		2.7 U	

Table 2.2
Final Results Summary - VOCs
June 2011 Soil Sampling
Olin Chemical Superfund Site
Wilmington, Massachusetts

Frac	Method	Analyte	Loc Name Field Sample ID Field Sample Date QC Code	SS-433		SS-448		SS-448		SS-452	
				Result	Qual	Result	Qual	Result	Qual	Result	Qual
Lab Sample Delivery Group	Units			360-34316-1		360-34316-1		360-34316-1		360-34316-1	
N	SW8260C	Chlorodibromomethane	ug/Kg	3.9 U		3.1 U		2.8 U		2.7 U	
N	SW8260C	Chloroethane	ug/Kg	7.8 U		6.3 U		5.7 U		5.4 U	
N	SW8260C	Chloroform	ug/Kg	3.9 U		3.1 U		2.8 U		2.7 U	
N	SW8260C	Chloromethane	ug/Kg	7.8 U		6.3 U		5.7 U		5.4 U	
N	SW8260C	Cis-1,2-Dichloroethene	ug/Kg	3.9 U		3.1 U		2.8 U		2.7 U	
N	SW8260C	cis-1,3-Dichloropropene	ug/Kg	3.9 U		3.1 U		2.8 U		2.7 U	
N	SW8260C	Cyclohexane	ug/Kg	39 U		31 U		28 U		27 U	
N	SW8260C	Dibromomethane	ug/Kg	3.9 U		3.1 U		2.8 U		2.7 U	
N	SW8260C	Dichlorodifluoromethane	ug/Kg	7.8 U		6.3 U		5.7 U		5.4 U	
N	SW8260C	Diethyl ether	ug/Kg	3.9 U		3.1 U		2.8 U		2.7 U	
N	SW8260C	Ethyl benzene	ug/Kg	3.9 U		3.1 U		2.8 U		2.7 U	
N	SW8260C	Ethyl-t-Butyl Ether	ug/Kg	3.9 U		3.1 U		2.8 U		2.7 U	
N	SW8260C	Hexachlorobutadiene	ug/Kg	3.9 U		3.1 UJ		2.8 UJ		2.7 U	
N	SW8260C	Isopropyl ether	ug/Kg	3.9 U		3.1 U		2.8 U		2.7 U	
N	SW8260C	Isopropylbenzene	ug/Kg	3.9 U		3.1 U		2.8 U		2.7 U	
N	SW8260C	Methyl cyclohexane	ug/Kg	3.9 U		3.1 U		2.8 U		2.7 U	
N	SW8260C	Methyl Tertbutyl Ether	ug/Kg	3.9 U		3.1 U		2.8 U		2.7 U	
N	SW8260C	Methylene chloride	ug/Kg	16 U		13 U		11 U		11 U	
N	SW8260C	n-Butylbenzene	ug/Kg	3.9 U		3.1 U		2.8 U		2.7 U	
N	SW8260C	Naphthalene	ug/Kg	39 U		31 UJ		28 UJ		27 U	
N	SW8260C	Propylbenzene	ug/Kg	3.9 U		3.1 U		2.8 U		2.7 U	
N	SW8260C	sec-Butylbenzene	ug/Kg	3.9 U		3.1 U		2.8 U		2.7 U	
N	SW8260C	Styrene	ug/Kg	3.9 U		3.1 U		2.8 U		2.7 U	
N	SW8260C	tert-Butylbenzene	ug/Kg	3.9 U		3.1 U		2.8 U		2.7 U	
N	SW8260C	Tetrachloroethene	ug/Kg	3.9 U		3.1 U		2.8 U		2.7 U	
N	SW8260C	Tetrahydrofuran	ug/Kg	39 UJ		31 UJ		28 UJ		27 UJ	
N	SW8260C	Toluene	ug/Kg	3.9 U		3.1 U		2.8 U		2.7 U	
N	SW8260C	trans-1,2-Dichloroethene	ug/Kg	3.9 U		3.1 U		2.8 U		2.7 U	
N	SW8260C	trans-1,3-Dichloropropene	ug/Kg	3.9 U		3.1 U		2.8 U		2.7 U	
N	SW8260C	Trichloroethene	ug/Kg	3.9 U		3.1 U		2.8 U		2.7 U	
N	SW8260C	Trichlorofluoromethane	ug/Kg	7.8 U		6.3 U		5.7 U		5.4 U	
N	SW8260C	Vinyl chloride	ug/Kg	3.9 U		3.1 U		2.8 U		2.7 U	
N	SW8260C	Xylene, o	ug/Kg	3.9 U		3.1 U		2.8 U		2.7 U	
N	SW8260C	Xylenes (m&p)	ug/Kg	7.8 U		6.3 U		5.7 U		5.4 U	

Notes:

N = normal

FS = field sample

FD = field duplicate

U = not detected, value is the detection limit

J = value is estimated

ug/Kg = microgram per kilogram

Prepared by / Date: KJC 09/09/11

Checked by / Date: BBL 09/09/11

Table 2.2
Final Results Summary - VOCs
June 2011 Soil Sampling
Olin Chemical Superfund Site
Wilmington, Massachusetts

Frac	Method	Analyte	Units	Loc Name	RINSE BLANK
				Field Sample ID	OC-EBK-019
				Field Sample Date	06/08/11
				QC Code	EB
				Lab Sample Delivery Group	360-34315-1
N	SW8260C	1,1,1,2-Tetrachloroethane	ug/L		1 U
N	SW8260C	1,1,1-Trichloroethane	ug/L		1 U
N	SW8260C	1,1,2,2-Tetrachloroethane	ug/L		0.5 U
N	SW8260C	1,1,2-Trichloro-1,2,2-Trifluoroethane	ug/L		1 U
N	SW8260C	1,1,2-Trichloroethane	ug/L		1 U
N	SW8260C	1,1-Dichloroethane	ug/L		1 U
N	SW8260C	1,1-Dichloroethene	ug/L		1 U
N	SW8260C	1,1-Dichloropropene	ug/L		1 U
N	SW8260C	1,2,3-Trichlorobenzene	ug/L		1 U
N	SW8260C	1,2,3-Trichloropropane	ug/L		1 U
N	SW8260C	1,2,4-Trichlorobenzene	ug/L		1 U
N	SW8260C	1,2,4-Trimethylbenzene	ug/L		1 U
N	SW8260C	1,2-Dibromo-3-chloropropane	ug/L		5 U
N	SW8260C	1,2-Dibromoethane	ug/L		1 U
N	SW8260C	1,2-Dichlorobenzene	ug/L		1 U
N	SW8260C	1,2-Dichloroethane	ug/L		1 U
N	SW8260C	1,2-Dichloropropane	ug/L		1 U
N	SW8260C	1,3,5-Trimethylbenzene	ug/L		1 U
N	SW8260C	1,3-Dichlorobenzene	ug/L		1 U
N	SW8260C	1,3-Dichloropropane	ug/L		1 U
N	SW8260C	1,4-Dichlorobenzene	ug/L		1 U
N	SW8260C	1,4-Dioxane	ug/L		50 U
N	SW8260C	2,2-Dichloropropane	ug/L		1 U
N	SW8260C	2,4,4-Trimethyl-1-pentene	ug/L		1 U
N	SW8260C	2,4,4-Trimethyl-2-pentene	ug/L		1 U
N	SW8260C	2-Butanone	ug/L		10 U
N	SW8260C	2-Chlorotoluene	ug/L		1 U
N	SW8260C	2-Hexanone	ug/L		10 U
N	SW8260C	4-Chlorotoluene	ug/L		1 U
N	SW8260C	4-iso-Propyltoluene	ug/L		1 U
N	SW8260C	4-Methyl-2-pentanone	ug/L		10 U
N	SW8260C	Acetic acid, methyl ester	ug/L		20 U
N	SW8260C	Acetone	ug/L		50 U
N	SW8260C	Benzene	ug/L		1 U
N	SW8260C	Bromobenzene	ug/L		1 U
N	SW8260C	Bromochloromethane	ug/L		1 U
N	SW8260C	Bromodichloromethane	ug/L		0.5 U
N	SW8260C	Bromoform	ug/L		1 U
N	SW8260C	Bromomethane	ug/L		2 U
N	SW8260C	Butane, 2-methoxy-2-methyl-	ug/L		5 U
N	SW8260C	Carbon disulfide	ug/L		10 U
N	SW8260C	Carbon tetrachloride	ug/L		1 U
N	SW8260C	Chlorobenzene	ug/L		1 U

Table 2.2
Final Results Summary - VOCs
June 2011 Soil Sampling
Olin Chemical Superfund Site
Wilmington, Massachusetts

Frac	Method	Analyte	Units	Loc Name	RINSE BLANK
				Field Sample ID	OC-EBK-019
				Field Sample Date	06/08/11
				QC Code	BB
				Lab Sample Delivery Group	360-34315-1
N	SW8260C	Chlorodibromomethane	ug/L	Result	0.5 U
N	SW8260C	Chloroethane	ug/L		2 U
N	SW8260C	Chloroform	ug/L		1.4
N	SW8260C	Chloromethane	ug/L		2 U
N	SW8260C	Cis-1,2-Dichloroethene	ug/L		1 U
N	SW8260C	cis-1,3-Dichloropropene	ug/L		0.4 U
N	SW8260C	Cyclohexane	ug/L		10 U
N	SW8260C	Dibromomethane	ug/L		1 U
N	SW8260C	Dichlorodifluoromethane	ug/L		1 U
N	SW8260C	Diethyl ether	ug/L		10 U
N	SW8260C	Ethyl benzene	ug/L		1 U
N	SW8260C	Ethyl-t-Butyl Ether	ug/L		5 U
N	SW8260C	Hexachlorobutadiene	ug/L		0.4 U
N	SW8260C	Isopropyl ether	ug/L		10 U
N	SW8260C	Isopropylbenzene	ug/L		1 U
N	SW8260C	Methyl cyclohexane	ug/L		10 U
N	SW8260C	Methyl Tertbutyl Ether	ug/L		1 U
N	SW8260C	Methylene chloride	ug/L		2 U
N	SW8260C	n-Butylbenzene	ug/L		1 U
N	SW8260C	Naphthalene	ug/L		5 U
N	SW8260C	Propylbenzene	ug/L		1 U
N	SW8260C	sec-Butylbenzene	ug/L		1 U
N	SW8260C	Styrene	ug/L		1 U
N	SW8260C	tert-Butylbenzene	ug/L		1 U
N	SW8260C	Tetrachloroethene	ug/L		1 U
N	SW8260C	Tetrahydrofuran	ug/L		10 U
N	SW8260C	Toluene	ug/L		1 U
N	SW8260C	trans-1,2-Dichloroethene	ug/L		1 U
N	SW8260C	trans-1,3-Dichloropropene	ug/L		0.4 U
N	SW8260C	Trichloroethene	ug/L		1 U
N	SW8260C	Trichlorodifluoromethane	ug/L		1 U
N	SW8260C	Vinyl chloride	ug/L		0.5 U
N	SW8260C	Xylene, o	ug/L		1 U
N	SW8260C	Xylenes (m&p)	ug/L		2 U

Notes:

N = normal

EB = equipment rinsate blank

U = not detected

ug/L = microgram per liter

Prepared by / Date: KJC 09/09/11

Checked by / Date: BBL 09/09/11

Table 2.2
Final Results Summary - VOCs
June 2011 Soil Sampling
Olin Chemical Superfund Site
Wilmington, Massachusetts

Frac	Method	Analyte	Units	Loc Name	TRIP BLANK		
				Field Sample ID	OC-TBK-081		
		Field Sample Date		06/08/11			
		QC Code		TB			
		Lab Sample Delivery Group		360-34316-1			
N	SW8260C	1,1,1,2-Tetrachloroethane	ug/Kg	2.5 U			
N	SW8260C	1,1,1-Trichloroethane	ug/Kg	2.5 U			
N	SW8260C	1,1,2,2-Tetrachloroethane	ug/Kg	2.5 U			
N	SW8260C	1,1,2-Trichloro-1,2,2-Trifluoroethane	ug/Kg	13 U			
N	SW8260C	1,1,2-Trichloroethane	ug/Kg	2.5 U			
N	SW8260C	1,1-Dichloroethane	ug/Kg	2.5 U			
N	SW8260C	1,1-Dichloroethene	ug/Kg	2.5 U			
N	SW8260C	1,1-Dichloropropene	ug/Kg	2.5 U			
N	SW8260C	1,2,3-Trichlorobenzene	ug/Kg	2.5 U			
N	SW8260C	1,2,3-Trichloropropane	ug/Kg	2.5 U			
N	SW8260C	1,2,4-Trichlorobenzene	ug/Kg	2.5 U			
N	SW8260C	1,2,4-Trimethylbenzene	ug/Kg	2.5 U			
N	SW8260C	1,2-Dibromo-3-chloropropane	ug/Kg	25 U			
N	SW8260C	1,2-Dibromoethane	ug/Kg	2.5 U			
N	SW8260C	1,2-Dichlorobenzene	ug/Kg	2.5 U			
N	SW8260C	1,2-Dichloroethane	ug/Kg	2.5 U			
N	SW8260C	1,2-Dichloropropane	ug/Kg	2.5 U			
N	SW8260C	1,3,5-Trimethylbenzene	ug/Kg	2.5 U			
N	SW8260C	1,3-Dichlorobenzene	ug/Kg	2.5 U			
N	SW8260C	1,3-Dichloropropane	ug/Kg	2.5 U			
N	SW8260C	1,4-Dichlorobenzene	ug/Kg	2.5 U			
N	SW8260C	1,4-Dioxane	ug/Kg	250 U			
N	SW8260C	2,2-Dichloropropane	ug/Kg	2.5 U			
N	SW8260C	2,4,4-Trimethyl-1-pentene	ug/Kg	5 U			
N	SW8260C	2,4,4-Trimethyl-2-pentene	ug/Kg	5 U			
N	SW8260C	2-Butanone	ug/Kg	25 U			
N	SW8260C	2-Chlorotoluene	ug/Kg	2.5 U			
N	SW8260C	2-Hexanone	ug/Kg	25 U			
N	SW8260C	4-Chlorotoluene	ug/Kg	2.5 U			
N	SW8260C	4-iso-Propyltoluene	ug/Kg	2.5 U			
N	SW8260C	4-Methyl-2-pentanone	ug/Kg	25 U			
N	SW8260C	Acetic acid, methyl ester	ug/Kg	50 U			
N	SW8260C	Acetone	ug/Kg	250 U			
N	SW8260C	Benzene	ug/Kg	2.5 U			
N	SW8260C	Bromobenzene	ug/Kg	2.5 U			
N	SW8260C	Bromochloromethane	ug/Kg	2.5 U			
N	SW8260C	Bromodichloromethane	ug/Kg	2.5 U			
N	SW8260C	Bromoform	ug/Kg	2.5 U			
N	SW8260C	Bromomethane	ug/Kg	5 U			
N	SW8260C	Butane, 2-methoxy-2-methyl-	ug/Kg	2.5 U			
N	SW8260C	Carbon disulfide	ug/Kg	2.5 U			
N	SW8260C	Carbon tetrachloride	ug/Kg	2.5 U			
N	SW8260C	Chlorobenzene	ug/Kg	2.5 U			

Table 2.2
Final Results Summary - VOCs
June 2011 Soil Sampling
Olin Chemical Superfund Site
Wilmington, Massachusetts

Frac	Method	Analyte	Units	Loc Name	TRIP BLANK
				Field Sample ID	OC-TBK-081
				Field Sample Date	06/08/11
				QC Code	TB
				Lab Sample Delivery Group	360-343;6-1
N	SW8260C	Chlorodibromomethane	ug/Kg		Result
N	SW8260C	Chloroethane	ug/Kg		Qual
N	SW8260C	Chloroform	ug/Kg		2.5 U
N	SW8260C	Chloromethane	ug/Kg		5 U
N	SW8260C	Cis-1,2-Dichloroethene	ug/Kg		2.5 U
N	SW8260C	cis-1,3-Dichloropropene	ug/Kg		2.5 U
N	SW8260C	Cyclohexane	ug/Kg		25 U
N	SW8260C	Dibromomethane	ug/Kg		2.5 U
N	SW8260C	Dichlorodifluoromethane	ug/Kg		5 U
N	SW8260C	Diethyl ether	ug/Kg		2.5 U
N	SW8260C	Ethyl benzene	ug/Kg		2.5 U
N	SW8260C	Ethyl-t-Butyl Ether	ug/Kg		2.5 U
N	SW8260C	Hexachlorobutadiene	ug/Kg		2.5 U
N	SW8260C	Isopropyl ether	ug/Kg		2.5 U
N	SW8260C	Isopropylbenzene	ug/Kg		2.5 U
N	SW8260C	Methyl cyclohexane	ug/Kg		2.5 U
N	SW8260C	Methyl Tertbutyl Ether	ug/Kg		2.5 U
N	SW8260C	Methylene chloride	ug/Kg		10 U
N	SW8260C	n-Butylbenzene	ug/Kg		2.5 U
N	SW8260C	Naphthalene	ug/Kg		25 U
N	SW8260C	Propylbenzene	ug/Kg		2.5 U
N	SW8260C	sec-Butylbenzene	ug/Kg		2.5 U
N	SW8260C	Styrene	ug/Kg		2.5 U
N	SW8260C	tert-Butylbenzene	ug/Kg		2.5 U
N	SW8260C	Tetrachloroethene	ug/Kg		2.5 U
N	SW8260C	Tetrahydrofuran	ug/Kg		25 U
N	SW8260C	Toluene	ug/Kg		2.5 U
N	SW8260C	trans-1,2-Dichloroethene	ug/Kg		2.5 U
N	SW8260C	trans-1,3-Dichloropropene	ug/Kg		2.5 U
N	SW8260C	Trichloroethene	ug/Kg		2.5 U
N	SW8260C	Trichlorofluoromethane	ug/Kg		5 U
N	SW8260C	Vinyl chloride	ug/Kg		2.5 U
N	SW8260C	Xylene, o	ug/Kg		2.5 U
N	SW8260C	Xylenes (m&p)	ug/Kg		5 U

Notes:

N = normal

TB = trip blank

U = not detected

ug/Kg = microgram per kilogram

Prepared by / Date:

KJC 09/09/11

Checked by / Date:

BBL 09/09/11

Table 3.2
Data Validation Action Summary - VOCs
June 2011 Soil Sampling
Olin Chemical Superfund Site
Wilmington, Massachusetts

Sample Delivery Group	Lab Sample ID	Analysis Method	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Validation Reason Code	Result Units
360-34316-1	360-34316-1	SW8260C	OC-SS-452-0/1.0-XXX	1,2,4-Trimethylbenzene	2.7	U *	2.7	UJ	CCV%D	ug/Kg
360-34316-1	360-34316-1	SW8260C	OC-SS-452-0/1.0-XXX	1,4-Dioxane	270	U	270	UJ	ICVRRF,CCVRRF	ug/Kg
360-34316-1	360-34316-1	SW8260C	OC-SS-452-0/1.0-XXX	Tetrahydrofuran	27	U	27	UJ	ICVRRF	ug/Kg
360-34316-1	360-34316-7	SW8260C	OC-SS-433-0/1.0-XXX	1,2,4-Trimethylbenzene	3.9	U *	3.9	UJ	CCV%D	ug/Kg
360-34316-1	360-34316-7	SW8260C	OC-SS-433-0/1.0-XXX	1,4-Dioxane	390	U	390	UJ	ICVRRF,CCVRRF	ug/Kg
360-34316-1	360-34316-7	SW8260C	OC-SS-433-0/1.0-XXX	Tetrahydrofuran	39	U	39	UJ	ICVRRF	ug/Kg
360-34316-1	360-34316-8	SW8260C	OC-SS-448-0/1.0-DUP	1,2,3-Trichlorobenzene	3.1	U	3.1	UJ	MS-L	ug/Kg
360-34316-1	360-34316-8	SW8260C	OC-SS-448-0/1.0-DUP	1,2,4-Trichlorobenzene	3.1	U	3.1	UJ	MS-L	ug/Kg
360-34316-1	360-34316-8	SW8260C	OC-SS-448-0/1.0-DUP	1,2,4-Trimethylbenzene	3.1	U *	3.1	UJ	CCV%D	ug/Kg
360-34316-1	360-34316-8	SW8260C	OC-SS-448-0/1.0-DUP	1,3-Dichlorobenzene	3.1	U	3.1	UJ	MS-L	ug/Kg
360-34316-1	360-34316-8	SW8260C	OC-SS-448-0/1.0-DUP	1,4-Dioxane	310	U	310	UJ	ICVRRF,CCVRRF	ug/Kg
360-34316-1	360-34316-8	SW8260C	OC-SS-448-0/1.0-DUP	Hexachlorobutadiene	3.1	U	3.1	UJ	MS-L	ug/Kg
360-34316-1	360-34316-8	SW8260C	OC-SS-448-0/1.0-DUP	Naphthalene	31	U	31	UJ	MS-L	ug/Kg
360-34316-1	360-34316-8	SW8260C	OC-SS-448-0/1.0-DUP	Tetrahydrofuran	31	U	31	UJ	ICVRRF	ug/Kg
360-34316-1	360-34316-9	SW8260C	OC-SS-448-0/1.0-XXX	1,2,3-Trichlorobenzene	2.8	U	2.8	UJ	MS-L	ug/Kg
360-34316-1	360-34316-9	SW8260C	OC-SS-448-0/1.0-XXX	1,2,4-Trichlorobenzene	2.8	U	2.8	UJ	MS-L	ug/Kg
360-34316-1	360-34316-9	SW8260C	OC-SS-448-0/1.0-XXX	1,2,4-Trimethylbenzene	2.8	U *	2.8	UJ	CCV%D	ug/Kg
360-34316-1	360-34316-9	SW8260C	OC-SS-448-0/1.0-XXX	1,3-Dichlorobenzene	2.8	U	2.8	UJ	MS-L	ug/Kg
360-34316-1	360-34316-9	SW8260C	OC-SS-448-0/1.0-XXX	1,4-Dioxane	280	U	280	UJ	ICVRRF,CCVRRF	ug/Kg
360-34316-1	360-34316-9	SW8260C	OC-SS-448-0/1.0-XXX	Hexachlorobutadiene	2.8	U	2.8	UJ	MS-L	ug/Kg
360-34316-1	360-34316-9	SW8260C	OC-SS-448-0/1.0-XXX	Naphthalene	28	U	28	UJ	MS-L	ug/Kg
360-34316-1	360-34316-9	SW8260C	OC-SS-448-0/1.0-XXX	Tetrahydrofuran	28	U	28	UJ	ICVRRF	ug/Kg

Units:

ug/Kg = microgram per kilogram

Validation Qualifier:

U = not detected, value is the detection limit

J = value is estimated

Validation Reason Codes:

CCV%D = Continuing calibration %D

CCVRRF = Continuing calibration RRF

ICVRRF = Initial calibration RRF

MS-H = MS and/or MSD recovery high

Prepared by / Date: KJC 09/09/11

Checked by / Date: BBL 09/09/11

VOLATILE ORGANICS

~~10% TIER III (m)~~
~~20% TIER II~~

REGION I VALIDATION CHECKLIST for
OLIN CHEMICAL SUPERFUND SITE

Criteria and Qualifications: REGION I Organics Guideline (1996)

TIER I (circle one)SITE: Olin Chemical Project #: 6107110016-12 SDG #: 360-34316LAB #: TAL-WFD

Sample IDs: Attach tracking sheet and/or sample listing.

This checklist is designed to be used with USEPA Region I Validation Guidelines Part II (12/1996). During Level III validation, calculation and transcription checks are completed for instrument tuning, surrogates, target compounds, spike recoveries, calibration data, and internal standards as specified in the guideline. These checks are documented on attached validation notes.

YES	NO	NA	
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Data completeness <input checked="" type="checkbox"/> <input type="checkbox"/> All data summaries, QC forms and raw data available from hard copy or electronic data package <input checked="" type="checkbox"/> <input type="checkbox"/> Data summaries match EDD
			Contact lab if missing data. Lab to respond with 24 hours. <i>OK</i>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Holding Times and Preservation <input checked="" type="checkbox"/> <input type="checkbox"/> Hold times met (14 days with preservation) <input checked="" type="checkbox"/> <input type="checkbox"/> Preserved (waters HCL, soils methanol)
			<i>OK</i>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Instrument Performance Check (Tune) <input checked="" type="checkbox"/> <input type="checkbox"/> Tune available for each 12-hour period samples were analyzed <input checked="" type="checkbox"/> <input type="checkbox"/> Appropriate number of significant figures reported (at least 2) <input checked="" type="checkbox"/> <input type="checkbox"/> Mass/Charge list (m/z) criteria met
			<i>OK</i>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Initial Calibration <input checked="" type="checkbox"/> <input type="checkbox"/> %RSD less than or equal to 30% <input checked="" type="checkbox"/> <input type="checkbox"/> RRF greater than or equal to 0.05
			<i>SEE ATTACHED</i>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Continuing Calibration <input type="checkbox"/> <input checked="" type="checkbox"/> %D less than or equal to 25% <input type="checkbox"/> <input checked="" type="checkbox"/> RRF greater than or equal to 0.05.
			<i>SEE ATTACHED</i>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Blank Contamination <input type="checkbox"/> <input checked="" type="checkbox"/> Method blank contamination <input type="checkbox"/> <input checked="" type="checkbox"/> Trip blank contamination <input checked="" type="checkbox"/> <input type="checkbox"/> Equipment/Rinseate blank contamination
			Evaluate all blanks for contamination. Highest contaminant level used for action level. <i>OK</i>

CHLORFORM @ 1.4 µg/g in RINSEATE BLANK
 OC → EBK → 019 (SDB 360-34315). ALL
 SAMPLES ND - NO QLALS

VOLATILE ORGANICS

REGION I VALIDATION CHECKLIST for OLIN CHEMICAL SUPERFUND SITE

Criteria and Qualifications: REGION I Organics Guideline (1996)

TIER I / II / III (circle one)

Surrogate Recoveries <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Surrogates percent recovery criteria met (water and soil: 70%-130%)	<i>OK</i>
Matrix Spikes and Laboratory Control Samples <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> MS/MSD percent recovery criteria met (water and soil: 70%-130%) <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> MS/MSD RPD criteria met (water and soil <30%) <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> LCS percent recovery criteria (water and soil: 70%-130%)	<i>SEE ATTACHMENT</i> <i>SOME %REC > 130% BUT SAMPLES NO NO QALUS</i>
Field Duplicates <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> RPD criteria (water <30%, soils <50%) met	<i>OK All ND</i>
Internal Standard <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Area counts within -50 to +100 percent of calib. std. <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Retention Time within 30 seconds of calib. std.	<i>OK</i>
Target Compounds <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Reviewed narrative for anomalies	<i>OK All ND IN SAMPLES</i>
Tentatively Identified Compounds (TICs) <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> TCL compounds reported as TICs	<i>All TICs ND</i>

Validator's Signature: B. Bradley Blodgett

Date: 9/8/11

Reference:

MACTEC, Quality Assurance Project Plan for Remedial Investigation/Feasibility Study – Olin Chemical Superfund Site, Wilmington Property, 51 Eames Street, Wilmington, MA”, MACTEC Engineering and Consulting. Draft .October 2008.

SAMPLE SUMMARY

Client: Olin Corporation

Job Number: 360-34316-1
Sdg Number: 360-34316-1

Lab Sample ID	Client Sample ID	Client Matrix	Date/Time Sampled	Date/Time Received
360-34316-1	OC-SS-452-0.0/1.0-XXX	Solid	06/08/2011 1135	06/08/2011 1750
360-34316-2	OC-PE-186642-HG	Solid	06/08/2011 1200	06/08/2011 1750
360-34316-3	OC-PE-MS00718-META	Solid	06/08/2011 1200	06/08/2011 1750
360-34316-4	OC-PE-SS4507-VOC	Solid	06/08/2011 1200	06/08/2011 1750
360-34316-5	OC-PE-VS0428-VOC	Solid	06/08/2011 1200	06/08/2011 1750
360-34316-6	OC-PE-VS0535-VOC	Solid	06/08/2011 1200	06/08/2011 1750
360-34316-7	OC-SS-433-0.0/1.0-XXX	Solid	06/08/2011 0845	06/08/2011 1750
360-34316-8	OC-SS-448-0.0/1.0-DUP	Solid	06/08/2011 0935	06/08/2011 1750
360-34316-9	OC-SS-448-0.0/1.0-XXX	Solid	06/08/2011 0935	06/08/2011 1750
360-34316-9MS	OC-SS-448-0.0/1.0-XXX	Solid	06/08/2011 0935	06/08/2011 1750
360-34316-9MSD	OC-SS-448-0.0/1.0-XXX	Solid	06/08/2011 0935	06/08/2011 1750
360-34316-10	OC-TBK-081	Solid	06/08/2011 0935	06/08/2011 1750

TETRAHYDROFURAN UT FCVRRF

1,4-DIOXANE UT ICVRRF, CCVRRF,

1,2,4-TRIMETHYLBENZENE UT CCV%D

OC-SS-448-0.0/1.0-XXX & DUP 1,2,3-TRICHLOROBENZENE UT MS-L

1,2,4-TRICHLOROBENZENE UT MS-L

1,3-DICHLOROBENZENE UT MS-L

HEXAHALOBRUTADINE UT MS-L

NAPHTHALENE UT MS-L

Analytical Data

Client: Olin Corporation

Job Number: 360-34316-1
Sdg Number: 360-34316-1

Client Sample ID: OC-SS-452-0.0/1.0-XXX

Lab Sample ID: 360-34316-1

Date Sampled: 06/08/2011 1135

Client Matrix: Solid

% Moisture: 3.7

Date Received: 06/08/2011 1750

8260C Volatile Organic Compounds (GC/MS)

Analysis Method:	8260C	Analysis Batch:	360-75708	Instrument ID:	HP #1 GC/MS
Prep Method:	5035	Prep Batch:	360-75701	Lab File ID:	V52949.D
Dilution:	1.0			Initial Weight/Volume:	4.77 g
Analysis Date:	06/21/2011 1631			Final Weight/Volume:	5 g
Prep Date:	06/21/2011 0903				

Analyte	Dry Wt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
1,1,1,2-Tetrachloroethane		ND		1.3	2.7
1,1,1-Trichloroethane		ND		2.0	2.7
1,1,2,2-Tetrachloroethane		ND		1.1	2.7
1,1,2-Trichloroethane		ND		1.1	2.7
1,1-Dichloroethane		ND		2.0	2.7
1,1-Dichloroethene		ND		1.7	2.7
1,1-Dichloropropene		ND		1.5	2.7
1,2,3-Trichlorobenzene		ND		1.2	2.7
1,2,3-Trichloropropane		ND		1.2	2.7
1,2,4-Trichlorobenzene		ND		1.1	2.7
1,2,4-Trimethylbenzene		ND J		1.3	2.7
1,2-Dibromo-3-Chloropropane		ND		1.5	27
1,2-Dichlorobenzene		ND		1.1	2.7
1,2-Dichloroethane		ND		2.2	2.7
1,2-Dichloropropane		ND		1.6	2.7
1,3,5-Trimethylbenzene		ND		1.4	2.7
1,3-Dichlorobenzene		ND		1.1	2.7
1,3-Dichloropropane		ND		1.2	2.7
1,4-Dichlorobenzene		ND		1.1	2.7
1,4-Dioxane		ND J		120	270
2,2-Dichloropropane		ND		2.2	2.7
2-Butanone (MEK)		ND		12	27
2-Chlorotoluene		ND		1.3	2.7
2-Hexanone		ND		15	27
4-Chlorotoluene		ND		1.2	2.7
4-Isopropyltoluene		ND		1.6	2.7
4-Methyl-2-pentanone (MIBK)		ND		11	27
Acetone		ND		110	270
Benzene		ND		1.9	2.7
Bromobenzene		ND		1.6	2.7
Bromoform		ND		1.7	2.7
Bromomethane		ND		2.5	5.4
Carbon disulfide		ND		2.1	2.7
Carbon tetrachloride		ND		1.9	2.7
Chlorobenzene		ND		1.2	2.7
Chlorobromomethane		ND		1.5	2.7
Chlorodibromomethane		ND		1.3	2.7
Chloroethane		ND		1.7	5.4
Chloroform		ND		1.6	2.7
Chloromethane		ND		1.5	5.4
cis-1,2-Dichloroethene		ND		1.3	2.7
cis-1,3-Dichloropropene		ND		1.1	2.7
Dibromomethane		ND		1.3	2.7
Dichlorobromomethane		ND		1.4	2.7
Dichlorodifluoromethane		ND		2.3	5.4
Ethyl ether		ND		1.1	2.7

9/7/11
BLA

Analytical Data

Client: Olin Corporation

Job Number: 360-34316-1
Sdg Number: 360-34316-1

Client Sample ID: OC-SS-452-0.0/1.0-XXX

Lab Sample ID: 360-34316-1

Date Sampled: 06/08/2011 1135

Client Matrix: Solid

% Moisture: 3.7

Date Received: 06/08/2011 1750

8260C Volatile Organic Compounds (GC/MS)

Analysis Method:	8260C	Analysis Batch:	360-75708	Instrument ID:	HP #1 GC/MS
Prep Method:	5035	Prep Batch:	360-75701	Lab File ID:	V52949.D
Dilution:	1.0			Initial Weight/Volume:	4.77 g
Analysis Date:	06/21/2011 1631			Final Weight/Volume:	5 g
Prep Date:	06/21/2011 0903				

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Ethylbenzene		ND		1.7	2.7
Ethylene Dibromide		ND		1.2	2.7
Hexachlorobutadiene		ND		1.5	2.7
Isopropyl ether		ND		1.2	2.7
Isopropylbenzene		ND		1.7	2.7
m-Xylene & p-Xylene		ND		3.3	5.4
Methyl tert-butyl ether		ND		1.6	2.7
Methylene Chloride		ND		2.2	11
n-Butylbenzene		ND		1.1	2.7
N-Propylbenzene		ND		1.1	2.7
Naphthalene		ND		2.5	27
o-Xylene		ND		1.4	2.7
sec-Butylbenzene		ND		1.5	2.7
Styrene		ND		1.1	2.7
Tert-amyl methyl ether		ND		1.6	2.7
Tert-butyl ethyl ether		ND		1.6	2.7
tert-Butylbenzene		ND		1.4	2.7
Tetrachloroethene		ND		1.7	2.7
Tetrahydrofuran		ND	J	31	27
Toluene		ND		1.9	2.7
trans-1,2-Dichloroethene		ND		1.5	2.7
trans-1,3-Dichloropropene		ND		2.2	2.7
Trichloroethene		ND		2.2	2.7
Trichlorofluoromethane		ND		1.7	5.4
Vinyl chloride		ND		1.7	2.7
1,1,2-Trichloro-1,2,2-trifluoroethane		ND		1.6	14
2,4,4-Trimethyl-1-pentene		ND		1.8	5.4
2,4,4-Trimethyl-2-pentene		ND		1.3	5.4
Cyclohexane		ND		1.1	27
Methyl acetate		ND		44	54
Methylcyclohexane		ND		1.7	2.7
<hr/>					
Surrogate		%Rec	Qualifier	Acceptance Limits	
4-Bromofluorobenzene		100		70 - 130	
Toluene-d8 (Surr)		101		70 - 130	
Dibromofluoromethane		103		70 - 130	

Analytical Data

Client: Olin Corporation

Job Number: 360-34316-1
Sdg Number: 360-34316-1

Client Sample ID: OC-SS-452-0.0/1.0-XXX

Lab Sample ID: 360-34316-1 Date Sampled: 06/08/2011 1135
Client Matrix: Solid Date Received: 06/08/2011 1750

8260C Volatile Organic Compounds (GC/MS)

Analysis Method:	8260C	Analysis Batch:	360-75708	Instrument ID:	HP #1 GC/MS
Prep Method:	5035	Prep Batch:	360-75701	Lab File ID:	V52949.D
Dilution:	1.0			Initial Weight/Volume:	4.77 g
Analysis Date:	06/21/2011 1631			Final Weight/Volume:	5 g
Prep Date:	06/21/2011 0903				

Tentatively Identified Compounds Number TIC's Found: 0

Cas Number	Analyte	RT	Est. Result (ug/Kg)	Qualifier
	Tentatively Identified Compound		None	

Analytical Data

Client: Olin Corporation

Job Number: 360-34316-1
Sdg Number: 360-34316-1

Client Sample ID: OC-SS-433-0.0/1.0-XXX

Lab Sample ID: 360-34316-7

Date Sampled: 06/08/2011 0845

Client Matrix: Solid

% Moisture: 4.8

Date Received: 06/08/2011 1750

8260C Volatile Organic Compounds (GC/MS)

Analysis Method:	8260C	Analysis Batch:	360-75708	Instrument ID:	HP #1 GC/MS
Prep Method:	5035	Prep Batch:	360-75701	Lab File ID:	V52950.D
Dilution:	1.0			Initial Weight/VOLUME:	3.38 g
Analysis Date:	06/21/2011 1656			Final Weight/VOLUME:	5 g
Prep Date:	06/21/2011 0903				

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
1,1,1,2-Tetrachloroethane		ND		1.9	3.9
1,1,1-Trichloroethane		ND		2.8	3.9
1,1,2,2-Tetrachloroethane		ND		1.6	3.9
1,1,2-Trichloroethane		ND		1.6	3.9
1,1-Dichloroethane		ND		2.8	3.9
1,1-Dichloroethene		ND		2.5	3.9
1,1-Dichloropropene		ND		2.2	3.9
1,2,3-Trichlorobenzene		ND		1.7	3.9
1,2,3-Trichloropropane		ND		1.7	3.9
1,2,4-Trichlorobenzene		ND		1.6	3.9
1,2,4-Trimethylbenzene		ND J		1.9	3.9
1,2-Dibromo-3-Chloropropane		ND		2.2	39
1,2-Dichlorobenzene		ND		1.6	3.9
1,2-Dichloroethane		ND		3.2	3.9
1,2-Dichloropropane		ND		2.3	3.9
1,3,5-Trimethylbenzene		ND		2.0	3.9
1,3-Dichlorobenzene		ND		1.6	3.9
1,3-Dichloropropane		ND		1.8	3.9
1,4-Dichlorobenzene		ND		1.6	3.9
1,4-Dioxane		ND J		170	390
2,2-Dichloropropane		ND		3.2	3.9
2-Butanone (MEK)		ND		18	39
2-Chlorotoluene		ND		1.9	3.9
2-Hexanone		ND		21	39
4-Chlorotoluene		ND		1.7	3.9
4-Isopropyltoluene		ND		2.3	3.9
4-Methyl-2-pentanone (MIBK)		ND		15	39
Acetone		ND		160	390
Benzene		ND		2.6	3.9
Bromobenzene		ND		2.3	3.9
Bromoform		ND		2.5	3.9
Bromomethane		ND		3.6	7.8
Carbon disulfide		ND		3.0	3.9
Carbon tetrachloride		ND		2.6	3.9
Chlorobenzene		ND		1.7	3.9
Chlorobromomethane		ND		2.1	3.9
Chlorodibromomethane		ND		1.8	3.9
Chloroethane		ND		2.5	7.8
Chloroform		ND		2.3	3.9
Chloromethane		ND		2.2	7.8
cis-1,2-Dichloroethene		ND		1.9	3.9
cis-1,3-Dichloropropene		ND		1.6	3.9
Dibromomethane		ND		1.9	3.9
Dichlorobromomethane		ND		2.0	3.9
Dichlorodifluoromethane		ND		3.3	7.8
Ethyl ether		ND		1.6	3.9

9/11/11
PMB/✓

Analytical Data

Client: Olin Corporation

Job Number: 360-34316-1
Sdg Number: 360-34316-1

Client Sample ID: OC-SS-433-0.0/1.0-XXX

Lab Sample ID: 360-34316-7

Date Sampled: 06/08/2011 0845

Client Matrix: Solid

% Moisture: 4.8

Date Received: 06/08/2011 1750

8260C Volatile Organic Compounds (GC/MS)

Analysis Method:	8260C	Analysis Batch:	360-75708	Instrument ID:	HP #1 GC/MS
Prep Method:	5035	Prep Batch:	360-75701	Lab File ID:	V52950.D
Dilution:	1.0			Initial Weight/Volume:	3.38 g
Analysis Date:	06/21/2011 1656			Final Weight/Volume:	5 g
Prep Date:	06/21/2011 0903				

Analyte	Dry Wt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Ethylbenzene		ND		2.5	3.9
Ethylene Dibromide		ND		1.7	3.9
Hexachlorobutadiene		ND		2.2	3.9
Isopropyl ether		ND		1.7	3.9
Isopropylbenzene		ND		2.5	3.9
m-Xylene & p-Xylene		ND		4.7	7.8
Methyl tert-butyl ether		ND		2.3	3.9
Methylene Chloride		ND		3.1	16
n-Butylbenzene		ND		1.6	3.9
N-Propylbenzene		ND		1.6	3.9
Naphthalene		ND		3.6	39
o-Xylene		ND		2.0	3.9
sec-Butylbenzene		ND		2.2	3.9
Styrene		ND		1.6	3.9
Tert-amyl methyl ether		ND		2.3	3.9
Tert-butyl ethyl ether		ND		2.3	3.9
tert-Butylbenzene		ND		2.0	3.9
Tetrachloroethene		ND		2.5	3.9
Tetrahydrofuran		ND		44	39
Toluene		ND		2.6	3.9
trans-1,2-Dichloroethene		ND		2.2	3.9
trans-1,3-Dichloropropene		ND		3.1	3.9
Trichloroethene		ND		3.1	3.9
Trichlorofluoromethane		ND		2.4	7.8
Vinyl chloride		ND		2.5	3.9
1,1,2-Trichloro-1,2,2-trifluoroethane		ND		2.2	19
2,4,4-Trimethyl-1-pentene		ND		2.5	7.8
2,4,4-Trimethyl-2-pentene		ND		1.8	7.8
Cyclohexane		ND		1.6	39
Methyl acetate		ND		62	78
Methylcyclohexane		ND		2.5	3.9

Surrogate	%Rec	Qualifier	Acceptance Limits
4-Bromofluorobenzene	99		70 - 130
Toluene-d8 (Surr)	101		70 - 130
Dibromofluoromethane	102		70 - 130

Analytical Data

Client: Olin Corporation

Job Number: 360-34316-1
Sdg Number: 360-34316-1

Client Sample ID: OC-SS-433-0.0/1.0-XXX

Lab Sample ID: 360-34316-7

Date Sampled: 06/08/2011 0845

Client Matrix: Solid

% Moisture: 4.8

Date Received: 06/08/2011 1750

8260C Volatile Organic Compounds (GC/MS)

Analysis Method:	8260C	Analysis Batch:	360-75708	Instrument ID:	HP #1 GC/MS
Prep Method:	5035	Prep Batch:	360-75701	Lab File ID:	V52950.D
Dilution:	1.0			Initial Weight/Volume:	3.38 g
Analysis Date:	06/21/2011 1656			Final Weight/Volume:	5 g
Prep Date:	06/21/2011 0903				

Tentatively Identified Compounds Number TIC's Found: 0

Cas Number	Analyte	RT	Est. Result (ug/Kg)	Qualifier
	Tentatively Identified Compound		None	

Analytical Data

Client: Olin Corporation

Job Number: 360-34316-1
Sdg Number: 360-34316-1

Client Sample ID: OC-SS-448-0.0/1.0-DUP

Lab Sample ID: 360-34316-8

Date Sampled: 06/08/2011 0935

Client Matrix: Solid

% Moisture: 4.6

Date Received: 06/08/2011 1750

8260C Volatile Organic Compounds (GC/MS)

Analysis Method:	8260C	Analysis Batch:	360-75708	Instrument ID:	HP #1 GC/MS
Prep Method:	5035	Prep Batch:	360-75701	Lab File ID:	V52951.D
Dilution:	1.0			Initial Weight/Volume:	4.17 g
Analysis Date:	06/21/2011 1720			Final Weight/Volume:	5 g
Prep Date:	06/21/2011 0903				

Analyte	Dry Wt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
1,1,1,2-Tetrachloroethane		ND		1.5	3.1
1,1,1-Trichloroethane		ND		2.3	3.1
1,1,2,2-Tetrachloroethane		ND		1.3	3.1
1,1,2-Trichloroethane		ND		1.3	3.1
1,1-Dichloroethane		ND		2.3	3.1
1,1-Dichloroethene		ND		2.0	3.1
1,1-Dichloropropene		ND		1.8	3.1
1,2,3-Trichlorobenzene		ND J		1.4	3.1
1,2,3-Trichloropropane		ND		1.4	3.1
1,2,4-Trichlorobenzene		ND J		1.3	3.1
1,2,4-Trimethylbenzene		ND J		1.5	3.1
1,2-Dibromo-3-Chloropropane		ND		1.8	31
1,2-Dichlorobenzene		ND		1.3	3.1
1,2-Dichloroethane		ND		2.6	3.1
1,2-Dichloropropane		ND		1.9	3.1
1,3,5-Trimethylbenzene		ND		1.6	3.1
1,3-Dichlorobenzene		ND J		1.3	3.1
1,3-Dichloropropane		ND		1.4	3.1
1,4-Dichlorobenzene		ND		1.3	3.1
1,4-Dioxane		ND J		140	310
2,2-Dichloropropane		ND		2.6	3.1
2-Butanone (MEK)		ND		14	31
2-Chlorotoluene		ND		1.5	3.1
2-Hexanone		ND		17	31
4-Chlorotoluene		ND		1.4	3.1
4-Isopropyltoluene		ND		1.9	3.1
4-Methyl-2-pentanone (MIBK)		ND		12	31
Acetone		ND		130	310
Benzene		ND		2.1	3.1
Bromobenzene		ND		1.9	3.1
Bromoform		ND		2.0	3.1
Bromomethane		ND		2.9	6.3
Carbon disulfide		ND		2.4	3.1
Carbon tetrachloride		ND		2.1	3.1
Chlorobenzene		ND		1.4	3.1
Chlorobromomethane		ND		1.7	3.1
Chlorodibromomethane		ND		1.5	3.1
Chloroethane		ND		2.0	6.3
Chloroform		ND		1.9	3.1
Chloromethane		ND		1.8	6.3
cis-1,2-Dichloroethene		ND		1.5	3.1
cis-1,3-Dichloropropene		ND		1.3	3.1
Dibromomethane		ND		1.6	3.1
Dichlorobromomethane		ND		1.6	3.1
Dichlorodifluoromethane		ND		2.6	6.3
Ethyl ether		ND		1.3	3.1

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Analytical Data

Client: Olin Corporation

Job Number: 360-34316-1
Sdg Number: 360-34316-1

Client Sample ID: OC-SS-448-0.0/1.0-DUP

Lab Sample ID: 360-34316-8

Date Sampled: 06/08/2011 0935

Client Matrix: Solid

% Moisture: 4.6

Date Received: 06/08/2011 1750

8260C Volatile Organic Compounds (GC/MS)

Analysis Method:	8260C	Analysis Batch:	360-75708	Instrument ID:	HP #1 GC/MS
Prep Method:	5035	Prep Batch:	360-75701	Lab File ID:	V52951.D
Dilution:	1.0			Initial Weight/Volume:	4.17 g
Analysis Date:	06/21/2011 1720			Final Weight/Volume:	5 g
Prep Date:	06/21/2011 0903				

Analyte	Dry Wt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Ethylbenzene		ND		2.0	3.1
Ethylene Dibromide		ND		1.4	3.1
Hexachlorobutadiene		ND ^J		1.8	3.1
Isopropyl ether		ND		1.4	3.1
Isopropylbenzene		ND		2.0	3.1
m-Xylene & p-Xylene		ND		3.8	6.3
Methyl tert-butyl ether		ND		1.9	3.1
Methylene Chloride		ND		2.5	13
n-Butylbenzene		ND		1.3	3.1
N-Propylbenzene		ND		1.3	3.1
Naphthalene		ND ^J		2.9	31
o-Xylene		ND		1.6	3.1
sec-Butylbenzene		ND		1.8	3.1
Styrene		ND		1.3	3.1
Tert-amyl methyl ether		ND		1.9	3.1
Tert-butyl ethyl ether		ND		1.8	3.1
tert-Butylbenzene		ND		1.6	3.1
Tetrachloroethene		ND		2.0	3.1
Tetrahydrofuran		ND ^J		36	31
Toluene		ND		2.1	3.1
trans-1,2-Dichloroethene		ND		1.8	3.1
trans-1,3-Dichloropropene		ND		2.5	3.1
Trichloroethene		ND		2.5	3.1
Trichlorofluoromethane		ND		1.9	6.3
Vinyl chloride		ND		2.0	3.1
1,1,2-Trichloro-1,2,2-trifluoroethane		ND		1.8	16
2,4,4-Trimethyl-1-pentene		ND		2.1	6.3
2,4,4-Trimethyl-2-pentene		ND		1.5	6.3
Cyclohexane		ND		1.3	31
Methyl acetate		ND		50	63
Methylcyclohexane		ND		2.0	3.1

Surrogate	% Rec	Qualifier	Acceptance Limits
4-Bromofluorobenzene	102		70 - 130
Toluene-d8 (Surr)	104		70 - 130
Dibromofluoromethane	109		70 - 130

Analytical Data

Client: Olin Corporation

Job Number: 360-34316-1
Sdg Number: 360-34316-1

Client Sample ID: OC-SS-448-0.0/1.0-DUP

Lab Sample ID: 360-34316-8

Date Sampled: 06/08/2011 0935

Client Matrix: Solid

% Moisture: 4.6

Date Received: 06/08/2011 1750

8260C Volatile Organic Compounds (GC/MS)

Analysis Method:	8260C	Analysis Batch:	360-75708	Instrument ID:	HP #1 GC/MS
Prep Method:	5035	Prep Batch:	360-75701	Lab File ID:	V52951.D
Dilution:	1.0			Initial Weight/Volume:	4.17 g
Analysis Date:	06/21/2011 1720			Final Weight/Volume:	5 g
Prep Date:	06/21/2011 0903				

Tentatively Identified Compounds Number TIC's Found: 0

Cas Number	Analyte	RT	Est. Result (ug/Kg)	Qualifier
	Tentatively Identified Compound		None	

Analytical Data

Client: Olin Corporation

Job Number: 360-34316-1
Sdg Number: 360-34316-1

Client Sample ID: OC-SS-448-0.0/1.0-XXX

Lab Sample ID: 360-34316-9

Date Sampled: 06/08/2011 0935

Client Matrix: Solid

% Moisture: 12.6

Date Received: 06/08/2011 1750

8260C Volatile Organic Compounds (GC/MS)

Analysis Method:	8260C	Analysis Batch:	360-75708	Instrument ID:	HP #1 GC/MS
Prep Method:	5035	Prep Batch:	360-75701	Lab File ID:	V52952.D
Dilution:	1.0			Initial Weight/Volume:	5.04 g
Analysis Date:	06/21/2011 1744			Final Weight/Volume:	5 g
Prep Date:	06/21/2011 0903				

Analyte	Dry Wt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
1,1,1,2-Tetrachloroethane		ND		1.4	2.8
1,1,1-Trichloroethane		ND		2.0	2.8
1,1,2,2-Tetrachloroethane		ND		1.1	2.8
1,1,2-Trichloroethane		ND		1.1	2.8
1,1-Dichloroethane		ND		2.0	2.8
1,1-Dichloroethene		ND		1.8	2.8
1,1-Dichloropropene		ND		1.6	2.8
1,2,3-Trichlorobenzene		ND J		1.2	2.8
1,2,3-Trichloropropane		ND		1.3	2.8
1,2,4-Trichlorobenzene		ND J		1.1	2.8
1,2,4-Trimethylbenzene		ND J		1.4	2.8
1,2-Dibromo-3-Chloropropane		ND		1.6	28
1,2-Dichlorobenzene		ND		1.1	2.8
1,2-Dichloroethane		ND		2.3	2.8
1,2-Dichloropropane		ND		1.7	2.8
1,3,5-Trimethylbenzene		ND		1.5	2.8
1,3-Dichlorobenzene		ND J		1.1	2.8
1,3-Dichloropropane		ND		1.3	2.8
1,4-Dichlorobenzene		ND		1.1	2.8
1,4-Dioxane		ND J		120	280
2,2-Dichloropropane		ND		2.3	2.8
2-Butanone (MEK)		ND		13	28
2-Chlorotoluene		ND		1.4	2.8
2-Hexanone		ND		16	28
4-Chlorotoluene		ND		1.2	2.8
4-Isopropyltoluene		ND		1.7	2.8
4-Methyl-2-pentanone (MIBK)		ND		11	28
Acetone		ND		110	280
Benzene		ND		1.9	2.8
Bromobenzene		ND		1.7	2.8
Bromoform		ND		1.8	2.8
Bromomethane		ND		2.6	5.7
Carbon disulfide		ND		2.2	2.8
Carbon tetrachloride		ND		1.9	2.8
Chlorobenzene		ND		1.2	2.8
Chlorobromomethane		ND		1.6	2.8
Chlorodibromomethane		ND		1.3	2.8
Chloroethane		ND		1.8	5.7
Chloroform		ND		1.7	2.8
Chloromethane		ND		1.6	5.7
cis-1,2-Dichloroethene		ND		1.4	2.8
cis-1,3-Dichloropropene		ND		1.1	2.8
Dibromomethane		ND		1.4	2.8
Dichlorobromomethane		ND		1.5	2.8
Dichlorodifluoromethane		ND		2.4	5.7
Ethyl ether		ND		1.2	2.8

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Analytical Data

Client: Olin Corporation

Job Number: 360-34316-1
Sdg Number: 360-34316-1

Client Sample ID: OC-SS-448-0.0/1.0-XXX

Lab Sample ID: 360-34316-9

Date Sampled: 06/08/2011 0935

Client Matrix: Solid

% Moisture: 12.6

Date Received: 06/08/2011 1750

8260C Volatile Organic Compounds (GC/MS)

Analysis Method:	8260C	Analysis Batch:	360-75708	Instrument ID:	HP #1 GC/MS
Prep Method:	5035	Prep Batch:	360-75701	Lab File ID:	V52952.D
Dilution:	1.0			Initial Weight/Volume:	5.04 g
Analysis Date:	06/21/2011 1744			Final Weight/Volume:	5 g
Prep Date:	06/21/2011 0903				

Analyte	Dry Wt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Ethylbenzene		ND		1.8	2.8
Ethylene Dibromide		ND		1.3	2.8
Hexachlorobutadiene		ND J		1.6	2.8
Isopropyl ether		ND		1.3	2.8
Isopropylbenzene		ND		1.8	2.8
m-Xylene & p-Xylene		ND		3.4	5.7
Methyl tert-butyl ether		ND		1.7	2.8
Methylene Chloride		ND		2.3	11
n-Butylbenzene		ND		1.1	2.8
N-Propylbenzene		ND		1.1	2.8
Naphthalene		ND J		2.7	28
o-Xylene		ND		1.5	2.8
sec-Butylbenzene		ND		1.6	2.8
Styrene		ND		1.1	2.8
Tert-amyl methyl ether		ND		1.7	2.8
Tert-butyl ethyl ether		ND		1.7	2.8
tert-Butylbenzene		ND		1.5	2.8
Tetrachloroethene		ND		1.8	2.8
Tetrahydrofuran		ND J		32	28
Toluene		ND		1.9	2.8
trans-1,2-Dichloroethene		ND		1.6	2.8
trans-1,3-Dichloropropene		ND		2.3	2.8
Trichloroethene		ND		2.3	2.8
Trichlorofluoromethane		ND		1.7	5.7
Vinyl chloride		ND		1.8	2.8
1,1,2-Trichloro-1,2,2-trifluoroethane		ND		1.6	14
2,4,4-Trimethyl-1-pentene		ND		1.9	5.7
2,4,4-Trimethyl-2-pentene		ND		1.3	5.7
Cyclohexane		ND		1.1	28
Methyl acetate		ND		45	57
Methylcyclohexane		ND		1.8	2.8

Surrogate	%Rec	Qualifier	Acceptance Limits
4-Bromofluorobenzene	99		70 - 130
Toluene-d8 (Surr)	101		70 - 130
Dibromofluoromethane	103		70 - 130

Analytical Data

Client: Olin Corporation

Job Number: 360-34316-1
Sdg Number: 360-34316-1

Client Sample ID: OC-SS-448-0.0/1.0-XXX

Lab Sample ID: 360-34316-9

Date Sampled: 06/08/2011 0935

Client Matrix: Solid

% Moisture: 12.6

Date Received: 06/08/2011 1750

8260C Volatile Organic Compounds (GC/MS)

Analysis Method:	8260C	Analysis Batch:	360-75708	Instrument ID:	HP #1 GC/MS
Prep Method:	5035	Prep Batch:	360-75701	Lab File ID:	V52952.D
Dilution:	1.0			Initial Weight/Volume:	5.04 g
Analysis Date:	06/21/2011 1744			Final Weight/Volume:	5 g
Prep Date:	06/21/2011 0903				

Tentatively Identified Compounds Number TIC's Found: 0

Cas Number	Analyte	RT	Est. Result (ug/Kg)	Qualifier
	Tentatively Identified Compound		None	

Analytical Data

Client: Olin Corporation

Job Number: 360-34316-1
Sdg Number: 360-34316-1

Client Sample ID: OC-TBK-081

Lab Sample ID: 360-34316-10

Date Sampled: 06/08/2011 0935

Client Matrix: Solid

Date Received: 06/08/2011 1750

8260C Volatile Organic Compounds (GC/MS)

Analysis Method:	8260C	Analysis Batch:	360-75708	Instrument ID:	HP #1.GC/MS
Prep Method:	5035	Prep Batch:	360-75701	Lab File ID:	V52948.D
Dilution:	1.0			Initial Weight/Volume:	5 g
Analysis Date:	06/21/2011 1606			Final Weight/Volume:	5 g
Prep Date:	06/21/2011 0903				

Analyte	Dry Wt Corrected: N	Result (ug/Kg)	Qualifier	MDL	RL
1,1,1,2-Tetrachloroethane	ND			1.2	2.5
1,1,1-Trichloroethane	ND			1.8	2.5
1,1,2,2-Tetrachloroethane	ND			1.0	2.5
1,1,2-Trichloroethane	ND			1.0	2.5
1,1-Dichloroethane	ND			1.8	2.5
1,1-Dichloroethene	ND			1.6	2.5
1,1-Dichloropropene	ND			1.4	2.5
1,2,3-Trichlorobenzene	ND			1.1	2.5
1,2,3-Trichloropropane	ND			1.1	2.5
1,2,4-Trichlorobenzene	ND			1.0	2.5
1,2,4-Trimethylbenzene	ND			1.2	2.5
1,2-Dibromo-3-Chloropropane	ND			1.4	25
1,2-Dichlorobenzene	ND			1.0	2.5
1,2-Dichloroethane	ND			2.1	2.5
1,2-Dichloropropane	ND			1.5	2.5
1,3,5-Trimethylbenzene	ND			1.3	2.5
1,3-Dichlorobenzene	ND			1.0	2.5
1,3-Dichloropropane	ND			1.1	2.5
1,4-Dichlorobenzene	ND			1.0	2.5
1,4-Dioxane	ND			110	250
2,2-Dichloropropane	ND			2.0	2.5
2-Butanone (MEK)	ND			11	25
2-Chlorotoluene	ND			1.2	2.5
2-Hexanone	ND			14	25
4-Chlorotoluene	ND			1.1	2.5
4-Isopropyltoluene	ND			1.5	2.5
4-Methyl-2-pentanone (MIBK)	ND			9.9	25
Acetone	ND			100	250
Benzene	ND			1.7	2.5
Bromobenzene	ND			1.5	2.5
Bromoform	ND			1.6	2.5
Bromomethane	ND			2.3	5.0
Carbon disulfide	ND			1.9	2.5
Carbon tetrachloride	ND			1.7	2.5
Chlorobenzene	ND			1.1	2.5
Chlorobromomethane	ND			1.4	2.5
Chlorodibromomethane	ND			1.2	2.5
Chloroethane	ND			1.6	5.0
Chloroform	ND			1.5	2.5
Chloromethane	ND			1.4	5.0
cis-1,2-Dichloroethene	ND			1.2	2.5
cis-1,3-Dichloropropene	ND			1.0	2.5
Dibromomethane	ND			1.2	2.5
Dichlorobromomethane	ND			1.3	2.5
Dichlorodifluoromethane	ND			2.1	5.0
Ethyl ether	ND			1.0	2.5

Analytical Data

Client: Olin Corporation

Job Number: 360-34316-1
Sdg Number: 360-34316-1

Client Sample ID: OC-TBK-081

Lab Sample ID: 360-34316-10

Date Sampled: 06/08/2011 0935

Client Matrix: Solid

Date Received: 06/08/2011 1750

8260C Volatile Organic Compounds (GC/MS)

Analysis Method:	8260C	Analysis Batch:	360-75708	Instrument ID:	HP #1 GC/MS
Prep Method:	5035	Prep Batch:	360-75701	Lab File ID:	V52948.D
Dilution:	1.0			Initial Weight/Volume:	5 g
Analysis Date:	06/21/2011 1606			Final Weight/Volume:	5 g
Prep Date:	06/21/2011 0903				

Analyte	DryWt Corrected: N	Result (ug/Kg)	Qualifier	MDL	RL
Ethylbenzene	ND			1.6	2.5
Ethylene Dibromide	ND			1.1	2.5
Hexachlorobutadiene	ND			1.4	2.5
Isopropyl ether	ND			1.1	2.5
Isopropylbenzene	ND			1.6	2.5
m-Xylene & p-Xylene	ND			3.0	5.0
Methyl tert-butyl ether	ND			1.5	2.5
Methylene Chloride	ND			2.0	10
n-Butylbenzene	ND			1.0	2.5
N-Propylbenzene	ND			1.0	2.5
Naphthalene	ND			2.3	25
o-Xylene	ND			1.3	2.5
sec-Butylbenzene	ND			1.4	2.5
Styrene	ND			1.0	2.5
Tert-amyl methyl ether	ND			1.5	2.5
Tert-butyl ethyl ether	ND			1.5	2.5
tert-Butylbenzene	ND			1.3	2.5
Tetrachloroethene	ND			1.6	2.5
Tetrahydrofuran	ND			28	25
Toluene	ND			1.7	2.5
trans-1,2-Dichloroethene	ND			1.4	2.5
trans-1,3-Dichloropropene	ND			2.0	2.5
Trichloroethene	ND			2.0	2.5
Trichlorofluoromethane	ND			1.5	5.0
Vinyl chloride	ND			1.6	2.5
1,1,2-Trichloro-1,2,2-trifluoroethane	ND			1.4	13
2,4,4-Trimethyl-1-pentene	ND			1.6	5.0
2,4,4-Trimethyl-2-pentene	ND			1.2	5.0
Cyclohexane	ND			1.0	25
Methyl acetate	ND			40	50
Methylcyclohexane	ND			1.6	2.5

Surrogate	%Rec	Qualifier	Acceptance Limits
4-Bromofluorobenzene	106		70 - 130
Toluene-d8 (Surr)	101		70 - 130
Dibromofluoromethane	102		70 - 130

Analytical Data

Client: Olin Corporation

Job Number: 360-34316-1
Sdg Number: 360-34316-1

Client Sample ID: OC-TBK-081

Lab Sample ID: 360-34316-10

Date Sampled: 06/08/2011 0935

Client Matrix: Solid

Date Received: 06/08/2011 1750

8260C Volatile Organic Compounds (GC/MS)

Analysis Method:	8260C	Analysis Batch:	360-75708	Instrument ID:	HP #1 GC/MS
Prep Method:	5035	Prep Batch:	360-75701	Lab File ID:	V52948.D
Dilution:	1.0			Initial Weight/Volume:	5 g
Analysis Date:	06/21/2011 1606			Final Weight/Volume:	5 g
Prep Date:	06/21/2011 0903				

Tentatively Identified Compounds Number TIC's Found: 0

Cas Number	Analyte	RT	Est. Result (ug/Kg)	Qualifier
	Tentatively Identified Compound		None	

Analytical Data

Client: Olin Corporation

Job Number: 360-34315-1
Sdg Number: 360-34315-1

Client Sample ID: OC-EBK-019

Lab Sample ID: 360-34315-13
Client Matrix: WaterDate Sampled: 06/08/2011 1315
Date Received: 06/08/2011 1750**8260C Volatile Organic Compounds (GC/MS)**

Analysis Method:	8260C	Analysis Batch:	360-75276	Instrument ID:	Agilent#2 GC/MS
Prep Method:	5030C	Prep Batch:	N/A	Lab File ID:	V18857.D
Dilution:	1.0			Initial Weight/Volume:	5 mL
Analysis Date:	06/15/2011 2204			Final Weight/Volume:	5 mL
Prep Date:	06/15/2011 2204				

Analyte	Result (ug/L)	Qualifier	MDL	RL
1,1,1,2-Tetrachloroethane	ND		0.20	1.0
1,1,1-Trichloroethane	ND		0.20	1.0
1,1,2,2-Tetrachloroethane	ND		0.20	0.50
1,1,2-Trichloroethane	ND		0.20	1.0
1,1-Dichloroethane	ND		0.20	1.0
1,1-Dichloroethene	ND		0.20	1.0
1,1-Dichloropropene	ND		0.20	1.0
1,2,3-Trichlorobenzene	ND		0.20	1.0
1,2,3-Trichloropropane	ND		0.20	1.0
1,2,4-Trichlorobenzene	ND		0.20	1.0
1,2,4-Trimethylbenzene	ND		0.20	1.0
1,2-Dibromo-3-Chloropropane	ND		0.20	5.0
1,2-Dichlorobenzene	ND		0.20	1.0
1,2-Dichloroethane	ND		0.20	1.0
1,2-Dichloropropane	ND		0.20	1.0
1,3,5-Trimethylbenzene	ND		0.20	1.0
1,3-Dichlorobenzene	ND		0.20	1.0
1,3-Dichloropropane	ND		0.20	1.0
1,4-Dichlorobenzene	ND		0.20	1.0
1,4-Dioxane	ND		22	50
2,2-Dichloropropane	ND		0.20	1.0
2-Butanone (MEK)	ND		1.3	10
2-Chlorotoluene	ND		0.20	1.0
2-Hexanone	ND		2.0	10
4-Chlorotoluene	ND		0.20	1.0
4-Isopropyltoluene	ND		0.20	1.0
4-Methyl-2-pentanone (MIBK)	ND		2.0	10
Acetone	ND		20	50
Benzene	ND		0.20	1.0
Bromobenzene	ND		0.20	1.0
Bromoform	ND		0.20	1.0
Bromomethane	ND		0.20	2.0
Carbon disulfide	ND		0.20	10
Carbon tetrachloride	ND		0.20	1.0
Chlorobenzene	ND		0.20	1.0
Chlorobromomethane	ND		0.20	1.0
Chlorodibromomethane	ND		0.20	0.50
Chloroethane	ND		0.21	2.0
Chloroform	1.4		0.20	1.0
Chloromethane	ND		0.20	2.0
cis-1,2-Dichloroethene	ND		0.20	1.0
cis-1,3-Dichloropropene	ND		0.20	0.40
Dibromomethane	ND		0.20	1.0
Dichlorobromomethane	ND		0.20	0.50
Dichlorodifluoromethane	ND		0.20	1.0
Ethyl ether	ND		0.20	10

9/1/11
Baker

Analytical Data

Client: Olin Corporation

Job Number: 360-34315-1
Sdg Number: 360-34315-1

Client Sample ID: OC-EBK-019

Lab Sample ID: 360-34315-13
Client Matrix: WaterDate Sampled: 06/08/2011 1315
Date Received: 06/08/2011 1750**8260C Volatile Organic Compounds (GC/MS)**

Analysis Method: 8260C
Prep Method: 5030C
Dilution: 1.0
Analysis Date: 06/15/2011 2204
Prep Date: 06/15/2011 2204

Analysis Batch: 360-75276
Prep Batch: N/A

Instrument ID: Agilent#2 GC/MS
Lab File ID: V18857.D
Initial Weight/Volume: 5 mL
Final Weight/Volume: 5 mL

Analyte	Result (ug/L)	Qualifier	MDL	RL
Ethylbenzene	ND		0.20	1.0
Ethylene Dibromide	ND		0.20	1.0
Hexachlorobutadiene	ND		0.20	0.40
Isopropyl ether	ND		0.20	10
Isopropylbenzene	ND		0.20	1.0
m-Xylene & p-Xylene	ND		0.50	2.0
Methyl tert-butyl ether	ND		0.20	1.0
Methylene Chloride	ND		1.0	2.0
n-Butylbenzene	ND		0.20	1.0
N-Propylbenzene	ND		0.20	1.0
Naphthalene	ND		2.0	5.0
o-Xylene	ND		0.20	1.0
sec-Butylbenzene	ND		0.20	1.0
Styrene	ND		0.20	1.0
Tert-amyl methyl ether	ND		0.20	5.0
Tert-butyl ethyl ether	ND		0.20	5.0
tert-Butylbenzene	ND		0.20	1.0
Tetrachloroethene	ND		0.20	1.0
Tetrahydrofuran	ND		0.44	10
Toluene	ND		0.20	1.0
trans-1,2-Dichloroethene	ND		0.20	1.0
trans-1,3-Dichloropropene	ND		0.20	0.40
Trichloroethene	ND		0.33	1.0
Trichlorofluoromethane	ND		0.20	1.0
Vinyl chloride	ND		0.20	0.50
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.20	1.0
2,4,4-Trimethyl-1-pentene	ND		0.20	1.0
2,4,4-Trimethyl-2-pentene	ND		0.20	1.0
Cyclohexane	ND		0.20	10
Methyl acetate	ND		2.0	20
Methylcyclohexane	ND		0.20	10
<i>9/11/14 bbw</i>				
Surrogate	%Rec	Qualifier	Acceptance Limits	
4-Bromofluorobenzene	95		70 - 130	
Toluene-d8 (Surr)	99		70 - 130	
Dibromofluoromethane	103		70 - 130	

Analytical Data

Client: Olin Corporation

Job Number: 360-34315-1
Sdg Number: 360-34315-1

Client Sample ID: OC-EBK-019

Lab Sample ID: 360-34315-13
Client Matrix: WaterDate Sampled: 06/08/2011 1315
Date Received: 06/08/2011 1750**8260C Volatile Organic Compounds (GC/MS)**

Analysis Method:	8260C	Analysis Batch:	360-75276	Instrument ID:	Agilent#2 GC/MS
Prep Method:	5030C	Prep Batch:	N/A	Lab File ID:	V18857.D
Dilution:	1.0			Initial Weight/Volume:	5 mL
Analysis Date:	06/15/2011 2204			Final Weight/Volume:	5 mL
Prep Date:	06/15/2011 2204				

Tentatively Identified Compounds **Number TIC's Found:** **0**

Cas Number	Analyte	RT	Est. Result (ug/L)	Qualifier
	Tentatively Identified Compound		None	

FORM VI
GC/MS VOA INITIAL CALIBRATION DATA
INTERNAL STANDARD CURVE EVALUTION

Lab Name: TestAmerica Westfield Job No.: 360-34316-1 Analy Batch No.: 74640
 SDG No.: 360-34316-1
 Instrument ID: HP #1 GC/MS GC Column: RTX-VMS ID: 0.25 (um) Heated Purge: (Y/N) Y
 Calibration Start Date: 06/02/2011 14:35 Calibration End Date: 06/02/2011 17:01 Calibration ID: 13911

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5		B	M1	M2								
Methyl tert-butyl ether	0.4083 0.4324	0.4331 0.4225	0.4374	0.4539	0.4682	Ave		0.4365			0.1000	4.5		15.0			
Isopropyl ether	1.0453 1.0194	0.9899 0.9717	1.0378	1.0933	1.0566	Ave		1.0306				4.0		15.0			
1,1-Dichloroethane	0.4910 0.4919	0.4718 0.4600	0.5093	0.5345	0.4834	Ave		0.4917			0.2000	5.0		15.0			
Halothane	0.1944 0.1862	0.1821 0.1856	0.2024	0.2085	0.1825	Ave		0.1917				5.4		15.0			
Tert-butyl ethyl ether	0.6721 0.6741	0.6614 0.6310	0.7127	0.7247	0.7173	Ave		0.6848				5.0		15.0			
cis-1,2-Dichloroethene	0.3695 0.3743	0.3651 0.3552	0.3862	0.3966	0.3693	Ave		0.3738			0.1000	3.7		15.0			
2,2-Dichloropropane	0.2955 0.1951	0.2321 0.1608	0.2385	0.2476	0.2121	QuaF		0.2332	-0.001						0.9990		0.9900
Chlorobromomethane	0.1232 0.1288	0.1224 0.1245	0.1322	0.1358	0.1338	Ave		0.1287				4.2		15.0			
Cyclohexane	0.4507 0.4763	0.4757 0.4163	0.4807	0.5570	0.4325	Ave		0.4699				9.7		15.0			
Chloroform	0.4443 0.4230	0.4162 0.4018	0.4295	0.4461	0.4213	Ave		0.4260			0.2000	3.7		15.0			
Carbon tetrachloride	0.2197 0.2831	0.2193 0.2527	0.2378	0.2485	0.2330	Ave		0.2420			0.1000	9.2		15.0			
Tetrahydrofuran	0.0454 0.0449	0.0454 0.0422	0.0468	0.0477	0.0512	Ave		0.0463	ICV RRF	UT		6.0		15.0			
1,1,1-Trichloroethane	0.3009 0.2997	0.2890 0.2717	0.3083	0.3258	0.2943	Ave		0.2985			0.1000	5.6		15.0			
2-Butanone (MEK)	1.3881 1.3016	1.2910 1.1951	1.2855	1.3076	1.3947	Ave		1.3091			0.1000	5.2		15.0			
1,1-Dichloropropene	0.3294 0.3243	0.3125 0.2929	0.3311	0.3418	0.3130	Ave		0.3207				5.0		15.0			
Benzene	1.0071 0.9703	0.9477 0.9182	1.0046	1.0333	0.9567	Ave		0.9768			0.5000	4.1		15.0			
Tert-amyl methyl ether	0.5009 0.5035	0.4525 0.4880	0.5134	0.5367	0.5482	Ave		0.5062				6.3		15.0			
1,2-Dichloroethane	0.2086 0.2037	0.1886 0.2031	0.1959	0.2063	0.2073	Ave		0.2019			0.1000	3.6		15.0			
2,4,4-Trimethyl-1-pentene	0.2216 0.1658	0.1975 0.1413	0.1959	0.2038	0.1727	Ave		0.1855				15.0		15.0			
Trichloroethene	0.2530 0.2342	0.2487 0.2123	0.2485	0.2497	0.2322	Ave		0.2398			0.2000	6.1		15.0			

Note: The m1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
GC/MS VOA INITIAL CALIBRATION DATA
INTERNAL STANDARD CURVE EVALUTION

Lab Name: TestAmerica Westfield

Job No.: 360-34316-1

Analy Batch No.: 74640

SDG No.: 360-34316-1

Instrument ID: HP #1 GC/MS

GC Column: RTX-VMS

ID: 0.25 (um)

Heated Purge: (Y/N) Y

Calibration Start Date: 06/02/2011 14:35

Calibration End Date: 06/02/2011 17:01

Calibration ID: 13911

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5		B	M1	M2								
Methylcyclohexane	0.3432 0.3902	0.3953 0.3332	0.3998	0.4565	0.3655	Ave		0.3834				11.0		15.0			
2,4,4-Trimethyl-2-pentene	0.1232 0.1375	0.1258 0.1232	0.1416	0.1505	0.1337	Ave		0.1337				7.7		15.0			
Dibromomethane	0.1007 0.0971	0.0853 0.0964	0.0948	0.0992	0.1006	Ave		0.0963				5.5		15.0			
1,2-Dichloropropane	0.2494 0.2249	0.2388 0.2031	0.2374	0.2420	0.2273	Ave		0.2319			0.1000	6.6		15.0			
Dichlorobromomethane	0.2466 0.2629	0.2353 0.2582	0.2508	0.2603	0.2578	Ave		0.2532			0.2000	3.8		15.0			
1,4-Dioxane	0.0149 0.0192		0.0153	0.0148	0.0137	Ave		0.0153		ICV/RMF UT		14.0		15.0			
cis-1,3-Dichloropropene	0.3040 0.3262	0.2807 0.3208	0.3125	0.3200	0.3204	Ave		0.3121			0.2000	5.0		15.0			
Toluene	0.5747 0.5621	0.5226 0.5302	0.5673	0.5814	0.5401	Ave		0.5540			0.4000	4.1		15.0			
4-Methyl-2-pantanone (MIBK)	2.7205 2.6333	2.6559 2.3098	2.7082	2.8503	2.9426	Ave		2.6886			0.1000	7.4		15.0			
Tetrachloroethene	0.2029 0.2014	0.1882 0.1821	0.2053	0.2127	0.1953	Ave		0.1983		*	0.2000	5.3		15.0			
trans-1,3-Dichloropropene	0.1982 0.2230	0.1945 0.2181	0.2157	0.2218	0.2214	Ave		0.2132			0.1000	5.6		15.0			
1,1,2-Trichloroethane	0.1076 0.1080	0.1036 0.1068	0.1027	0.1087	0.1099	Ave		0.1068			0.1000	2.5		15.0			
Chlorodibromomethane	0.1175 0.1574	0.1306 0.1544	0.1430	0.1505	0.1568	Ave		0.1443			0.1000	10.0		15.0			
1,3-Dichloropropane	0.2140 0.2305	0.2048 0.2297	0.2213	0.2252	0.2321	Ave		0.2225				4.5		15.0			
Ethylene Dibromide	0.1028 0.1242	0.1061 0.1239	0.1162	0.1205	0.1245	Ave		0.1169				7.7		15.0			
2-Hexanone	1.7703 1.6948	1.7648 1.5396	1.7294	1.7854	1.8199	Ave		1.7292			0.1000	5.4		15.0			
Chlorobenzene	1.0929 0.9442	1.0110 0.8391	1.0244	1.0429	0.9531	Ave		0.9868			0.5000	8.4		15.0			
Ethylbenzene	1.8930 1.6333	1.7215 1.4025	1.8507	1.8775	1.6751	Ave		1.7220			0.1000	10.0		15.0			
1,1,1,2-Tetrachloroethane	0.3000 0.3078	0.3010 0.2796	0.3282	0.3338	0.3150	Ave		0.3093				6.0		15.0			
m-Xylene & p-Xylene	1.3742 1.2392	1.3121 1.0538	1.4081	1.4207	1.2815	Ave		1.2985			0.1000	9.8		15.0			

Note: The m1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VII
GC/MS VOA CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Westfield

Job No.: 360-34316-1

SDG No.: 360-34316-1

Lab Sample ID: CCVIS 360-75708/2

Calibration Date: 06/21/2011 14:02

Instrument ID: HP #1 GC/MS

Calib Start Date: 06/02/2011 14:35

GC Column: RTX-VMS ID: 0.25 (um)

Calib End Date: 06/02/2011 17:01

Lab File ID: V52943.D

Conc. Units: ug/L Heated Purge: (Y/N) Y

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Dichlorodifluoromethane	Ave	0.2640	0.2956	0.1000	22.4	20.0	12.0	20.0
Chloromethane	Ave	0.4909	0.4895	0.1000	19.9	20.0	-0.3	20.0
Vinyl chloride	Ave	0.3197	0.3215	0.1000	20.1	20.0	0.6	20.0
Bromomethane	Ave	0.2067	0.2225	0.1000	21.5	20.0	7.6	20.0
Chloroethane	Ave	0.1954	0.2111	0.1000	21.6	20.0	8.0	20.0
Trichlorofluoromethane	Ave	0.2897	0.3085	0.1000	21.3	20.0	6.5	20.0
Ethyl ether	Ave	0.1767	0.1910		21.6	20.0	8.1	20.0
1,1-Dichloroethene	Ave	0.2254	0.2458	0.1000	21.8	20.0	9.1	20.0
Carbon disulfide	Ave	0.6780	0.7736	0.1000	22.8	20.0	14.1	20.0
1,1,2-Trichloro-1,2,2-trifluoroethane	Ave	0.1356	0.1308		19.3	20.0	-3.5	20.0
Methylene Chloride	Lin		0.2917	0.1000	19.8	20.0	-1.0	20.0
Acetone	Ave	0.7106	0.8450	0.1000	238	200	18.9	20.0
trans-1,2-Dichloroethene	Ave	0.3935	0.4539	0.1000	23.1	20.0	15.4	20.0
Methyl acetate	Ave	0.1082	0.1204		223	200	11.2	20.0
Methyl tert-butyl ether	Ave	0.4365	0.4778	0.1000	21.9	20.0	9.5	20.0
Isopropyl ether	Ave	1.031	1.165		22.6	20.0	13.1	20.0
1,1-Dichloroethane	Ave	0.4917	0.5628	0.2000	22.9	20.0	14.5	20.0
Halothane	Ave	0.1917	0.2082		21.7	20.0	8.6	20.0
Tert-butyl ethyl ether	Ave	0.6848	0.7660		22.4	20.0	11.9	20.0
cis-1,2-Dichloroethene	Ave	0.3738	0.4323	0.1000	23.1	20.0	15.7	20.0
2,2-Dichloropropane	QuaF		0.2464		23.2	20.0	16.0	20.0
Chlorobromomethane	Ave	0.1287	0.1381		21.5	20.0	7.3	20.0
Cyclohexane	Ave	0.4699	0.5030		21.4	20.0	7.1	20.0
Chloroform	Ave	0.4260	0.4907	0.2000	23.0	20.0	15.2	20.0
Carbon tetrachloride	Ave	0.2420	0.2693	0.1000	22.3	20.0	11.3	20.0
Tetrahydrofuran	Ave	0.0462	0.0507		219	200	9.7	20.0
1,1,1-Trichloroethane	Ave	0.2985	0.3318	0.1000	22.2	20.0	11.1	20.0
2-Butanone (MEK)	Ave	1.309	1.471	0.1000	225	200	12.3	20.0
1,1-Dichloropropene	Ave	0.3207	0.3741		23.3	20.0	16.6	20.0
Benzene	Ave	0.9768	1.116	0.5000	22.8	20.0	14.2	20.0
Tert-amyl methyl ether	Ave	0.5062	0.5512		21.8	20.0	8.9	20.0
1,2-Dichloroethane	Ave	0.2019	0.2331	0.1000	23.1	20.0	15.5	20.0
2,4,4-Trimethyl-1-pentene	Ave	0.1855	0.1915		20.6	20.0	3.2	20.0
Methylcyclohexane	Ave	0.3834	0.4334		22.6	20.0	13.0	20.0
Trichloroethene	Ave	0.2398	0.2926	0.2000	24.4	20.0	22.0*	20.0
2,4,4-Trimethyl-2-pentene	Ave	0.1337	0.1496		22.4	20.0	11.9	20.0
Dibromomethane	Ave	0.0963	0.1094		22.7	20.0	13.6	20.0
1,2-Dichloropropane	Ave	0.2319	0.2599	0.1000	22.4	20.0	12.1	20.0
Dichlorobromomethane	Ave	0.2532	0.2952	0.2000	23.3	20.0	16.6	20.0
1,4-Dioxane	Ave	0.0156	0.0162	[CCVRRF] UT 208	200	3.7	20.0	

FORM VII
GC/MS VOA CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Westfield

Job No.: 360-34316-1

SDG No.: 360-34316-1

Lab Sample ID: CCVIS 360-75708/2

Calibration Date: 06/21/2011 14:02

Instrument ID: HP #1 GC/MS

Calib Start Date: 06/02/2011 14:35

GC Column: RTX-VMS ID: 0.25 (um)

Calib End Date: 06/02/2011 17:01

Lab File ID: V52943.D

Conc. Units: ug/L Heated Purge: (Y/N) Y

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
cis-1,3-Dichloropropene	Ave	0.3121	0.3570	0.2000	22.9	20.0	14.4	20.0
Toluene	Ave	0.5540	0.6254	0.4000	22.6	20.0	12.9	20.0
4-Methyl-2-pantanone (MIBK)	Ave	2.689	3.225	0.1000	240	200	20.0	20.0
Tetrachloroethene	Ave	0.1983	0.2261	0.2000	22.8	20.0	14.0	20.0
trans-1,3-Dichloropropene	Ave	0.2132	0.2507	0.1000	23.5	20.0	17.6	20.0
1,1,2-Trichloroethane	Ave	0.1068	0.1173	0.1000	22.0	20.0	9.8	20.0
Chlorodibromomethane	Ave	0.1443	0.1615	0.1000	22.4	20.0	11.9	20.0
1,3-Dichloropropane	Ave	0.2225	0.2483		22.3	20.0	11.6	20.0
Ethylene Dibromide	Ave	0.1169	0.1296		22.2	20.0	10.8	20.0
2-Hexanone	Ave	1.729	2.018	0.1000	233	200	16.7	20.0
Chlorobenzene	Ave	0.9868	1.018	0.5000	20.6	20.0	3.1	20.0
Ethylbenzene	Ave	1.722	1.869	0.1000	21.7	20.0	8.6	20.0
1,1,1,2-Tetrachloroethane	Ave	0.3093	0.3203		20.7	20.0	3.5	20.0
m-Xylene & p-Xylene	Ave	1.299	1.423	0.1000	43.8	40.0	9.6	20.0
o-Xylene	Ave	1.377	1.501	0.3000	21.8	20.0	9.0	20.0
Styrene	Ave	1.020	1.104	0.3000	21.6	20.0	8.2	20.0
Bromoform	Ave	0.5294	0.5117	0.1000	19.3	20.0	-3.4	20.0
Isopropylbenzene	Ave	1.667	1.823	0.1000	21.9	20.0	9.3	20.0
Bromobenzene	Ave	0.6512	0.6957		21.4	20.0	6.8	20.0
N-Propylbenzene	Ave	1.972	2.169		22.0	20.0	10.0	20.0
1,1,2,2-Tetrachloroethane	Ave	0.9369	0.8597	0.3000	18.4	20.0	-8.2	20.0
2-Chlorotoluene	Ave	1.315	1.402		21.3	20.0	6.6	20.0
1,3,5-Trimethylbenzene	Ave	1.295	1.410		21.8	20.0	8.9	20.0
1,2,3-Trichloropropane	Ave	0.0609	0.0615		20.2	20.0	1.0	20.0
4-Chlorotoluene	Ave	1.201	1.253		20.9	20.0	4.3	20.0
tert-Butylbenzene	Ave	1.145	1.237		21.6	20.0	8.0	20.0
1,2,4-Trimethylbenzene	Ave	1.335	1.914		28.7	20.0	43.4	20.0
sec-Butylbenzene	Ave	1.772	1.914		21.6	20.0	8.1	20.0
4-Isopropyltoluene	Ave	1.401	1.501		21.4	20.0	7.1	20.0
1,3-Dichlorobenzene	Ave	0.7027	0.7230	0.6000	20.6	20.0	2.9	20.0
1,4-Dichlorobenzene	Ave	2.717	2.662	0.5000	19.6	20.0	-2.0	20.0
n-Butylbenzene	Ave	5.475	5.701		20.8	20.0	4.1	20.0
1,2-Dichlorobenzene	Ave	2.372	2.336	0.4000	19.7	20.0	-1.5	20.0
1,2-Dibromo-3-Chloropropane	Ave	0.1383	0.1278	0.0500	18.5	20.0	-7.6	20.0
Hexachlorobutadiene	Ave	0.9264	0.9014		19.5	20.0	-2.7	20.0
1,2,4-Trichlorobenzene	Ave	1.555	1.478	0.2000	19.0	20.0	-4.9	20.0
Naphthalene	Ave	2.190	2.131		19.5	20.0	-2.7	20.0
1,2,3-Trichlorobenzene	Ave	1.213	1.183		19.5	20.0	-2.5	20.0
Dibromofluoromethane	Ave	0.2217	0.2239		20.2	20.0	1.0	20.0
Toluene-d8 (Surr)	Ave	0.8617	0.8909		20.7	20.0	3.4	20.0
4-Bromofluorobenzene	Ave	0.4736	0.4823		20.4	20.0	1.8	20.0

Quality Control Results

Client: Olin Corporation

Job Number: 360-34316-1
Sdg Number: 360-34316-1

**Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 360-75701**

**Method: 8260C
Preparation: 5035**

OC-SS-448-0.0/1.0-XXX + DIP

MS Lab Sample ID: 360-34316-9
Client Matrix: Solid
Dilution: 1.0
Analysis Date: 06/21/2011 1832
Prep Date: 06/21/2011 0903
Leach Date: N/A

Analysis Batch: 360-75708
Prep Batch: 360-75701
Leach Batch: N/A

Instrument ID: HP #1 GC/MS
Lab File ID: V52954.D
Initial Weight/Volume: 3.66 g
Final Weight/Volume: 5 g

MSD Lab Sample ID: 360-34316-9
Client Matrix: Solid
Dilution: 1.0
Analysis Date: 06/21/2011 1856
Prep Date: 06/21/2011 0903
Leach Date: N/A

Analysis Batch: 360-75708
Prep Batch: 360-75701
Leach Batch: N/A

Instrument ID: HP #1 GC/MS
Lab File ID: V52955.D
Initial Weight/Volume: 4.02 g
Final Weight/Volume: 5 g

Analyte			Limit	RPD	RPD Limit	MS Qual	MSD Qual
	MS	MSD					
1,1,1,2-Tetrachloroethane	100	103	70 - 130	6	30		
1,1,1-Trichloroethane	105	105	70 - 130	9	30		
1,1,2,2-Tetrachloroethane	105	113	70 - 130	2	30		
1,1,2-Trichloroethane	106	102	70 - 130	13	30		
1,1-Dichloroethane	115✓	114✓	70 - 130	10	30		
1,1-Dichloroethene	100	100	70 - 130	9	30		
1,1-Dichloropropene	102	100	70 - 130	11	30		
1,2,3-Trichlorobenzene	46	46	70 - 130	11	30	UJ	F MS-L
1,2,3-Trichloropropane	95	97	70 - 130	7	30	UJ	F MS-L
1,2,4-Trichlorobenzene	50	47	70 - 130	14	30		
1,2,4-Trimethylbenzene	114	110	70 - 130	13	30		
1,2-Dibromo-3-Chloropropane	91	100	70 - 130	0	30		
1,2-Dichlorobenzene	84	80	70 - 130	14	30		
1,2-Dichloroethane	111	112	70 - 130	8	30		
1,2-Dichloropropane	110	111	70 - 130	8	30		
1,3,5-Trimethylbenzene	95	93	70 - 130	12	30		
1,3-Dichlorobenzene	74	68	70 - 130	19	30	UJ	F MS-L
1,3-Dichloropropane	106	101	70 - 130	14	30		
1,4-Dichlorobenzene	78	75	70 - 130	13	30		
1,4-Dioxane	86	91	70 - 130	4	30		
2,2-Dichloropropane	115	107	70 - 130	17	30		
2-Butanone (MEK)	134	138	70 - 130	7	30	F	F ND
2-Chlorotoluene	93	90	70 - 130	13	30		
2-Hexanone	119	118	70 - 130	10	30		
4-Chlorotoluene	84	78	70 - 130	16	30		
4-Isopropyltoluene	87	83	70 - 130	14	30		
4-Methyl-2-pentanone (MIBK)	128	127	70 - 130	10	30		
Acetone	134	142	70 - 130	4	30	F	F ND
Benzene	106	105	70 - 130	10	30		
Bromobenzene	91	86	70 - 130	15	30		
Bromoform	97	101	70 - 130	6	30		
Bromomethane	98	96	70 - 130	11	30		
Carbon disulfide	120	118	70 - 130	11	30		

Quality Control Results

Client: Olin Corporation

Job Number: 360-34316-1
Sdg Number: 360-34316-1

**Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 360-75701**

**Method: 8260C
Preparation: 5035**

MS Lab Sample ID:	360-34316-9	Analysis Batch:	360-75708	Instrument ID:	HP #1 GC/MS
Client Matrix:	Solid	Prep Batch:	360-75701	Lab File ID:	V52954.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	3.66 g
Analysis Date:	06/21/2011 1832			Final Weight/Volume:	5 g
Prep Date:	06/21/2011 0903				
Leach Date:	N/A				

MSD Lab Sample ID:	360-34316-9	Analysis Batch:	360-75708	Instrument ID:	HP #1 GC/MS
Client Matrix:	Solid	Prep Batch:	360-75701	Lab File ID:	V52955.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	4.02 g
Analysis Date:	06/21/2011 1856			Final Weight/Volume:	5 g
Prep Date:	06/21/2011 0903				
Leach Date:	N/A				

Analyte	% Rec.						
	MS	MSD	Limit	RPD	RPD Limit	MS Qual	MSD Qual
Carbon tetrachloride	97	100	70 - 130	6	30		
Chlorobenzene	90	88	70 - 130	12	30		
Chlorobromomethane	98	101	70 - 130	6	30		
Chlorodibromomethane	97	94	70 - 130	12	30		
Chloroethane	108	108	70 - 130	9	30		
Chloroform	110	111	70 - 130	8	30		
Chloromethane	90	89	70 - 130	10	30		
cis-1,2-Dichloroethene	109	108	70 - 130	10	30		
cis-1,3-Dichloropropene	100	95	70 - 130	14	30		
Dibromomethane	103	102	70 - 130	11	30		
Dichlorobromomethane	108	105	70 - 130	12	30		
Dichlorodifluoromethane	73	74	70 - 130	7	30		
Ethyl ether	110	113	70 - 130	6	30		
Ethylbenzene	100	98	70 - 130	11	30		
Ethylene Dibromide	95	94	70 - 130	10	30		
Hexachlorobutadiene	45	43	70 - 130	14	30	UT	F
Isopropyl ether	117	119	70 - 130	8	30		
Isopropylbenzene	98	96	70 - 130	11	30		
m-Xylene & p-Xylene	98	97	70 - 130	11	30		
Methyl tert-butyl ether	111	119	70 - 130	2	30		
Methylene Chloride	112	117	70 - 130	5	30		
n-Butylbenzene	81	77	70 - 130	14	30		
N-Propylbenzene	94	90	70 - 130	13	30		
Naphthalene	63	65	70 - 130	5	30	UT	F
o-Xylene	101	101	70 - 130	9	30		
sec-Butylbenzene	86	83	70 - 130	13	30		
Styrene	91	88	70 - 130	13	30		
Tert-amyl methyl ether	113	120	70 - 130	4	30		
Tert-butyl ethyl ether	121	126	70 - 130	5	30		
tert-Butylbenzene	93	92	70 - 130	10	30		
Tetrachloroethene	96	91	70 - 130	15	30		
Tetrahydrofuran	105	107	70 - 130	8	30		
Toluene	102	99	70 - 130	12	30		